THE SCHOOL REVIEW

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

Agents

THE CAMBRIDGE UNIVERSITY PRESS
LONDON AND EDINBURGH

THE MARUZEN-KABUSHIKI-KAISHA
TOKYO, OSAKA, KYOTO

KARL W. HIERSEMANN
LEIPZIG

THE BAKER & TAYLOR COMPANY
NEW YORK

THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

Edited by
THE FACULTY OF THE SCHOOL OF EDUCATION OF THE UNIVERSITY OF CHICAGO

VOLUME XXII

JANUARY—DECEMBER, 1914

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

Published
January, February, March, April, May, June, September,
October, November, December, 1914

Composed and Printed By
The University of Chicago Press
Chicago, Illinois, U.S.A.

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THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

VOLUME XXII JANUARY 1914 NUMBER 1

THE ORGANIZATION OF A LARGE HIGH SCHOOL

JOHN A. BOLE

Eastern District High School, Brooklyn, New York

NOTE.—In this number, the *School Review* begins a series of articles on several important secondary schools. The purpose of each article is to set forth the definite experience of a leading school in one or more administrative problems.—EDITOR.

It is the aim of this paper to describe the process of organization which has been in use for some time at the Eastern District High School. It has to do only with the organization of the pupils of the four years' general course, all of whom are in the main building. At present 1,887 pupils are on register in this course. The course has several variations, offers certain electives, and allows unrestricted promotion by subject. In the first year pupils choose either Latin or German as a foreign language, in the second year there is a choice between French, German, and Greek as a second foreign language, in the third and fourth years there are various electives, domestic science, physics, chemistry, physiography, advanced mathematics, and a third foreign language.

The terms "official class" and "subject class" will be used. An official class is a group of pupils who assemble at the opening and close of school in their official classroom under the charge of their official class teacher, who keeps their records. A subject class is a group which recites any subject together. There is no connection between an official class and a subject class. The term "class" means subject class unless "official" is specifically stated.

Promotion by subject is the feature that contributes most to the difficulty of organization. A group of forty pupils taking the same subjects at the beginning of the first year will show many differences at the end of the first term. Some will have passed all subjects, several will have failed in some one of the different subjects, others will have failed in two, three, or four subjects, a few in all. The divergence increases with each term on account of failure, choice of different electives, and in some cases through pupils advancing ahead of their grade. At the close of the third year very few of the original forty will be doing the same work. Only about one-third of the pupils in the school have regular programs, while the programs of some pupils contain work in four or five different grades. With such diversity of programs the problem is to make the classes of the school uniform in size and to contain the maximum number of pupils consistent with efficient teaching.

The work of program making must be done in the briefest possible time, after the records for the term have been made up and before the new term begins.

To make the general program it is necessary to know definitely how many pupils will take each grade of each subject for the following term. What grade of each subject each pupil will take must be known in order to make the individual programs. To get this

PROMOTED FROM ____ TO ____

(FAMILY NAME) (GIVEN NAME) DATE

SUBJECT	1A	1B	2A	2B	3A	3B	4A	4B	TCHR.
English									
Latin									
German									
French									
Greek									
Math.									
Science									
History									
Elocution									
Drawing									
Music									
P. T.									

information the foregoing Promotion Card was devised; 1A indicates the first term, 1B the second term, etc.

Tentative marks for the term are given by subject teachers to official class teachers about ten days before the state examinations begin. These marks may be altered any time before the end of the term on account of improvement or neglect of work by the pupil, and by the results of the state examinations or the school examinations, which are given during the week of the state examinations in all subjects and grades in which state examinations are not given. A pupil whose work was unsatisfactory but who passes either the state or school examination is credited with the term's work. The number of changes made in the tentative marks is, however, small, not enough to greatly affect the organization based on the tentative marks.

From these marks the official class teacher makes out a promotion card for each pupil in his class. The initial of the subject placed in the proper column indicates what term of each subject the pupil should take. The card shows also from what grade and section the pupil comes and to what grade he is to be promoted, the section being left blank. The following card is a typical one:

Smith, (FAMILY NAME) John (GIVEN NAME) PROMOTED FROM $_2B^{2*}$ TO 3A

DATE

SUBJECT	1A	1B	2A	2B	3A	3B	4A	4B	TCHR. I. DOE
English						E			
Latin									
German						G			
French					F				
Greek									
Math.				M					
Science					S				
History					H				
Elocution									
Drawing						DR.			
Music						MU.			
P. T.						P.T.			

*At the left, 2 means the second year in the school; B is the second half of the year; 2 at the right indicates the second section of pupils of this grade; „B² is the fifth section.

The promotion cards of each class are accompanied by an alphabetic list of the class on which the promotions are marked as on the cards, and by the summary of the class, that is, a card showing how many members of the class will take each grade of each subject. A class summary follows:

SUMMARY $_2B^5$ PROMOTED FROM ____ TO ____

(FAMILY NAME) (GIVEN NAME) DATE

SUBJECT	1A	1B	2A	2B	3A	3B	4A	4B	TCHR.
English			3	4	26	2			
Latin		2	7	12	12				
German			2	5	9				
French			2	8	1				
Greek					6				
Math.		1	5	9	20				
Science					26				
History			2	6	23	4			
Elocution			2	11					
Drawing			2	7					
Music					34	1			
P. T.				2	32	1			

These cards and class lists are given to the promotion committee as soon as possible. From the summary cards the grand summary of the school is compiled. This summary shows the total number of pupils who are to take each grade of each subject. From this the number of classes necessary is determined.

The next step is the arrangement of the official classes. The cards are arranged by grades for the next term. If each class is to contain 35 pupils, the cards are placed in groups of 35, like cards being grouped together, but not more than 25 regular cards being put in the same group. The section of the group is then marked upon each card of the group. A card which before read, "From 2B2 to 3A," will now read "to 3A3." After each name on the class lists is then noted the section in which the card has been placed and to which the pupil is to be promoted. The official classes are then assigned to official classrooms and teachers, and the list of official class teachers and rooms is made.

The subject classes are now taken up. Two things are essential, a simple notation which designates each class distinctly, and regularity in the general program. To make the general program regular each class is placed at the same period each day it recites. Double periods are eliminated. Instead of a double laboratory period for physics a single period is given with two teachers in charge. Each class is designated by three figures, e.g., 306. The first figure shows the grade of work and the third the period of the day at which it recites. Thus 306 is a third term class reciting the sixth period. A second class in the same subject the sixth period would be 316, a third class 326. If the class recites every day of the week no days are indicated. If it meets except on one or two days the class symbol is followed by X (except), and the initials of the days on which it does not recite, as 306 X WF. If it meets only once or twice a week the symbol is followed by a dash and the initials of the days on which it recites, as 306—WF.

In arranging the classes of any subject two things must be considered, the relation of each class to other classes of the same grade of the subject, and its relation to other subjects which the pupil may take. The general program is most serviceable when the different classes of the same grade of a subject are placed at different periods. If there are six classes in a grade there will be one class at each of the six periods of the day. Care must of course be taken that the total number of classes at any period does not exceed the number of teachers of the subject who are available. In the case of subjects reciting less than five times a week care is taken to afford the greatest number of combinations with other short subjects. English and history, which recite three or four times a week, may be combined with drawing of the same or adjoining grades twice a week, with physical training twice, with music or elocution, each once a week. Drawing, physical training, and elocution or music may be combined.

Next the classes are assigned to the teachers of each subject. For this purpose a sheet of paper is ruled with six horizontal lines, one for each period of the day, and as many vertical columns as there are teachers in the department. The classes can then be easily assigned to the various teachers. Two points are kept in

mind, the equal distribution of work, and the limitation of the number of grades of work assigned to each teacher.

The last step in making the general program is to assign the classes to rooms for recitation. It may happen that there are sometimes more classes to be provided for than there are rooms. In such cases some classes have to be shifted. The assignment of rooms is made by means of cards, one set arranged by teachers, another by rooms. The classes each teacher is to teach are entered on the program card of the teacher. Official class teachers teach, as a rule, their classes in their own rooms. But there are some teachers without official classes and rooms. The subject classes of the official class teachers are entered on the cards for the corresponding rooms, and the unoccupied rooms are then used for the classes of teachers without classrooms. Any rooms still unoccupied are used for study classes, to which teachers, when not teaching, are assigned. When this work is completed the room cards show the teacher and class assigned to each room for each period of the week and the teachers' cards show the room and class assigned. Errors are eliminated by checking the two sets of cards with each other.

The general program is now complete and may be mimeographed. It is arranged by subjects and shows classes, teachers, and rooms. Teachers are designated by numbers according to seniority. Thus the French teachers are F1, F2, F3, and F4. The English, Latin, and drawing programs for the present 2B grade are given as an illustration.

English			Latin			Drawing		
Class	Teacher	Room	Class	Teacher	Room	Class	Teacher	Room
401 XThF ...	9	121	402.....	2	404	401 TF.....	3	223
402 XTF	1	211	403.....	7	212	402 TF.....	3	223
403 XThF ...	12	311	404.....	10	309	403 TF.....	5	123
404 XTF.....	1	211	405.....	8	207	404 TF.....	3	223
405 XThF ...	1	211	406.....	2	404	405 MTh ...	2	323
406 XMTh...	8	122				406 MTh ...	2	323
412 XMTh...	5	422				414 MTh ...	5	123
						415 ThF....	5	123

Up to this point the work can be done by one person with some clerical assistance, which in the Eastern District is furnished by

pupils from the commercial department. The pupils' programs can now be begun. This work can be done best by the smallest committee that can accomplish the task in the time at their disposal. The Eastern District committee consists of five teachers. At the end of the examination week the chairmen of marking committees report to the program committee all pupils whose standings have been changed by the results of the examinations. The official class of the pupil is given on these reports. The class lists with promotions marked show in which of the new classes the pupil's card is, the card is found, and the correction made. The work of making the programs now begins. One member of the committee commences with the programs of the 4B grade, one with 3B, one with 2B, one with 1B. When the programs of a class have been made they are given to the fifth member who counts and records the number assigned to each class. A copy of the general program has been made and hung on the wall, where it can be seen by all members of the committee. When 25 pupils have been assigned to a class a dash (—) is made on this large program after the class, when the number has reached 30 the dash is changed to a cross (+), when 35 have been put in the class the cross is inclosed in a circle (⊕), and no more pupils are assigned to it. One person can count and record the programs as fast as four can make them.

It is desirable that the official class teacher should teach the pupils of his class. This is accomplished by first providing on the pupils' programs for the subject of the official class teacher. If he is a history teacher, the pupils are first assigned to one of his history classes and then their other subjects are arranged for. These pupils may take the same class in history no matter how they differ in other subjects, or they may be in different classes in history also, but in classes taught by the same teacher.

The new 1A pupils are given straight class programs, while those left back in 1A subjects are for the most part assigned to additional 1A classes, which do not appear on the regular 1A programs.

The programs are made by writing in the blank space to the right of the promotion card, on a line with the subject, the class to which the pupil is assigned in each subject. When the program

is complete a glance will show whether it is correct or not. If the last figure does not occur more than once the program is correct, or it may occur more than once if the subjects combine on the same period. In the specimen program, drawing, music, and P. T. combine respectively with history, mathematics, and English.

Smith, (FAMILY NAME)	John (GIVEN NAME)	PROMOTED FROM	$2B^2$	TO	$3A^3$	DATE

SUBJECT	1A	1B	2A	2B	3A	3B	4A	4B	TCHR. I. DOE
English						E			604
Latin									
German						G			606
French					F				505
Greek									
Math.				M					401
Science					S				502
History					H				503
Elocution									
Drawing						DR.			603
Music						MU.			601
P. T.						P.T.			604

The last step is to transfer the program from the promotion card to the pupil's program card. This is done by each official class teacher for his new class. Each teacher is provided with a copy of the general program. From this he transfers to the program card the information given in regard to the classes indicated on the promotion card. The first day the subject occurs he writes in full in the proper space, for example, 402 L4 Room 404. The next time the initial of the subject "L" is sufficient. When the program is complete "St" is written in all blank spaces on the card. These cards are then stamped by the chairman of the program committee and are given to the pupils the first morning of the new term. Every pupil knows where to go for each period of the week and is obliged to go there, for each teacher inspects the programs of all pupils reporting to his classes and excludes from the room any whose programs do not authorize them to be there.

The 1A pupils and some of the regulars are assigned to definite study rooms on their programs, but most of the pupils are not so assigned. During the first week of the new term pupils having unassigned study periods report at the beginning of such period to the Assembly. From there they are sent with teachers to the rooms available for study periods. If they cannot all find seats in these study rooms they are assigned to any unoccupied seats in rooms where recitations are going on.

Some errors are made by the official class teachers in making the promotion cards and some by the program committee in their work. Some pupils obtain permission from the principal to take work out of the regular order. These corrections and modifications are still to be made. The official class teacher writes on the back of the promotion card a statement of what is required and gives the card to the chairman of the program committee, who indicates what change to make in the program and returns the card to the teacher. This teacher makes on a program card the program indicated and sends the pupil with his promotion card, his first program, and his revised program to the program committee at the close of school. The new program is stamped and the old one taken from the pupil. Each teacher reports the number present at the first meeting of each class. In changing programs sent to the committee for revision care is taken to take the pupil out of large classes and put him in small ones, when there is an opportunity to do so. In this way inequalities which appeared in the classes are to some extent removed. These inequalities are for the most part due to the dropping-out of school of pupils, in some cases to error. However, the only adjustment of classes that is necessary is that made in revising these programs.

The method just described was followed in organizing the school for the present term. The state examinations began on January 15, 1912. Tentative marks for the term were given by the subject teachers to the official class teachers on January 3. From these marks promotion and summary cards were made out and cards and class lists were given to the program committee on January 5. The grand summary showing the total number of pupils who should take each grade of each subject was at once compiled.

For example, the summary for English was: 4B 126, 4A 126, 3B 161, 3A 205, 2B 237, 2A 240, 1B 321, and 86 unfortunates who had to repeat 1A English. The maximum for a class had been fixed at 35. Division by 35 showed the number of sections necessary in each grade. This was for 4B 4, 4A 4, 3B 5, 3A 6, 2A 7, 1B 9, and for 1A 10, as nine new 1A classes were to be admitted.

The general program was completed during the first four days of examination week by the arrangement of classes and assignment of teachers and rooms. The work to this point was done by the chairman of the committee alone, who had been allowed to give his whole time to it. On Monday, January 22, standings of pupils which had been changed by the examinations were reported. January 23 the program committee began making pupils' programs and completed the work in three days of six hours each. The programs were transferred from the promotion cards to the pupils' program cards by the teachers on the afternoons of January 30 and 31.

The organization obtained in the manner described is tolerably satisfactory. Each teacher reported the number present at each recitation for the week of February 13–19. The highest number present at any recitation of the week was taken as the size of the class. The size of classes in the different subjects is shown by the following table:

Subject	No. of Classes Above 1A	No. of Classes Over 35	Average Class
English	42	3 (36, 36, 38)	33
Latin	29	3 (36, 37, 39)	30
German	22	0	28
French	21	0	27
Mathematics	34	5 (36, 36, 36, 37, 38)	31
Science	27	2 (36, 38)	31
History	27	1 (36)	31
Elocution	27	3 (36, 37, 41)	30
Drawing	33	2 (36, 36)	30

The attendance on February 15, 1912, was 1,760. The number of teachers employed is 53, the average of attendance to teacher, 28.

The average number of periods per week taught by teachers in the various subjects is: English, 20.4; Latin, 22.8; German, 23.4; French, 23.5; mathematics, 21.4; science, 21.3; history, 21.7; elocution, 25; drawing, 21.5.

It seems permissible to draw several conclusions. First, promotion by subject does not necessitate small classes, nor classes uneven in size. It is not more expensive than class promotion, but rather more economical, as pupils do not repeat work once satisfactorily done.

Second, if classes are of uniform size a relatively large number of pupils can be taught without overcrowding classes and without overworking teachers. Thirty-five does not seem an excessive maximum for a class. It is easier to teach two classes of 35 each than one class of 40 and one of 20, and ten more pupils have been provided for.

Third, such an organization can be effected in a reasonable amount of time. The aggregate number of hours for which the program committee was relieved from other work was 105.

CO-OPERATION BETWEEN THE NATIONAL EDUCATION ASSOCIATION AND THE NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION

ROBERT J. FULLER
Chairman of Committee on Vocational Education and Vocational Guidance
Superintendent of Schools, North Attleboro, Mass.

Unusual activity among all forces, the state, the church, the school, the social worker, the labor organization, the employer, for the improvement of social and economic conditions, marks this as a period of especial significance. In many places have been organized efficiency committees, bureaus of municipal research, bureaus of child labor, bureaus of health, commissions of inquiry, both state and national, whose duty or aim is to investigate actual conditions and later to suggest remedies which make for the betterment of human welfare. So general are the organizations and so closely related are the problems that there is a constant overlapping of the work of one body upon the work of another. It would appear that such interweaving would result sometimes both in confusion and failure of achievement. It were fitting then that this society, organized for a definite end, with practical men in charge, should take the initiative in an attempt at co-ordination of effort among some of these forces. It is with that end in view that this topic has been given a place on your program.

In this discussion there has been set up: First, The general proposition that the N.E.A. is entering upon a new era of usefulness by attacking concrete problems; second, That the most effective work in the accomplishment of vocational education can be brought about by a co-ordination and uniting of forces interested in the promotion of such education; third, That the N.E.A. Committee on Vocational Education recognizes the service already rendered by the National Society in carrying forward this work; fourth, A definite program of co-operation for a unification of effort of the National Society and the Special Committee of the N.E.A. This

program is to consist, first, of an agreement as to definitions, second, of an acceptance of certain definite principles and policies, third, of a pronouncement upon debatable issues, and, finally of an interchange of ideas and reports which shall be of mutual advantage to this society and to the Vocational Committee and thence to the cause of vocational education.

Among the organizations for the promotion of the general good, few if any, antedate that known as the National Education Association. Few, if any, have so persistently pursued the same phantom unabated, sometimes with results remarkable in breadth and application and sometimes equally remarkable in their narrowness and failure to meet the concrete application to the real problem of life. Facing the facts squarely, the N.E.A. has been, and must continue to be, a real force in the social and economic welfare of this country. It is the one organization in which the people at large have confidence, for it is the one institution representing the public school in the broadest sense of that term. However much internal dissension it may have had, however much derision and abuse may be heaped upon it, it still is an organization of the great army of teachers of the public schools of this country. These teachers and the public-school systems from which they come are nearer to the interests of all the people than any other institution in our republic. Again, these same public-school systems have usually served as the type or pattern for the organization of any form of vocational education. Is it not then profitable for the National Society for the Promotion of Industrial Education to devise ways and means by which it may come into closer contact with the more inclusive and more widely accepted organization, the N.E.A.?

In any analysis of the numerous social activities we are no doubt agreed that they are but an indication of the spirit of the people of a democracy to bear their share of the responsibility in the settlement of national, state, and municipal problems. In the assumption of this responsibility there may be more or less of selfishness and greed and a vague hope of securing that which will enable each to enjoy as much of luxury as his neighbor. The fact remains, whether as a result of conditions or temperament, that an

unrest exists. Far be it from me to say that vocational education alone can solve the problem, that vocational guidance can do more than help, that academic or cultural education is the solution. That a perfect code of eugenic laws, or perfect regulation of child labor, or any other of the long list of welfare movements will eradicate this unrest. Rather will it be lessened when all of these forces unite through some central clearing-house, toward the one end of sensible, humane lives for all the people. At present to what institution can we better look than to the public school, enlarged to include all types of education from professional to vocational and backed by all the moral, social, and economic organizations for the amelioration of this unrest?

The N.E.A., representing as it does nearly all sides of the educational field, from the university to the kindergarten, and from philosophic reasoning to the concrete application of theories to everyday practice, for many years has been considering some of the questions which confront this society. The difficulty has been not so much in the desire or sincerity of the persons interested in the movement as in the acceptance of the doctrines, theories, and reasoning which formed the background of their educational philosophy.

When we realize that it is scarcely thirty years since the faculty psychology was the most as well as the best we had, we have some conception of the limitations of some of our educational traditions. These traditions have had, and in many cases continue to have, their effect upon present-day curricula. It is little wonder that manual training with wide general aims failed to function as a practical introduction to the manual occupations. It was heresy to think that through it a person could be trained for any practical job. It was the old story of "turning molasses into a barrel and expecting to draw from the spigot grape juice" or any other equally harmless concoction which might satisfy the fancy of the individual.

However, the N.E.A. from time to time has undertaken constructive work. Accumulative experience has rendered some of these beginnings of less value to us than to the generation in which they had their inception. Nevertheless, the fact remains, that the report of the Committee of Fifteen, the report of the Committee of Ten, and the later reports of the Committee on the Place of

Industries in Public Education, the report of the Committee on Uniform Method of Keeping School Records, and the more recent work of the Committees on the Articulation of the High School and College, and the Committee on Standards have had a more or less far-reaching effect upon the work of the public school. True it is, however, that on the one hand the N.E.A., either through intent or oversight, has failed usually to secure the assistance of others than educators for this work. On the other hand, the National Society for the Promotion of Industrial Education, consciously, no doubt, has made this co-operation one of its working policies. The neglect of this necessary co-operation frequently caused the work of the Association to fall short of its possibilities. This again has caused disinterested persons as well as persons with a grievance to point sneeringly to the weakness without suggesting a possible remedy. That the N.E.A. is itself conscious of the condition and is seeking a constructive program, is more and more in evidence at each succeeding meeting. More especially is this true of the Department of Superintendence, where such practical topics as Scientific Management in Education and those other unpedantic and commonplace subjects, such as Team Play, are being discussed. This was again illustrated by the adoption of resolutions in Chicago, 1912, asking for the appointment of a committee consisting of school men, labor men, social-welfare workers, and employers to investigate the question of vocational education.

In the variety of interests represented, this Vocational Education Committee was very unlike committees previously appointed by the N.E.A. When we realize further that many of the members of this committee are active workers in the National Society, we can begin at least to feel that the N.E.A. is after all somewhat alive to the modern trend in educational endeavor. Nor is this all. At the time of the presentation of the preliminary report of this committee at the Salt Lake City meeting last July, a movement was inaugurated which is almost sure to result in a change of name of one of the large departments of the N.E.A. It is proposed that the department hitherto known as the Department of Manual Training and Art shall hereafter be known as the Department of Vocational Education and Manual or Practical Arts.

Since this spirit of progress has manifested itself in the N.E.A., the time would seem opportune for the establishment of more intimate relations between this society and the N.E.A. By this means may be effected an actual saving of effort in the study of concrete problems. This committee of the N.E.A., on Vocational Education and Vocational Guidance, which is meeting here this week has for its task the consideration of Vocational Education in Part Time and Continuation Schools for those persons between the ages of fourteen and eighteen years. It is proposed by this committee to prepare a handbook which shall be useful to those who wish to undertake some phase of this particular form of vocational education. This committee through a subcommittee will also consider the question of Vocational Guidance. In the work of this committee the co-operation and support of this society are needed, nor are we entirely without a definite suggestion for that co-operation.

Among others of the prominent committees of the National Education Association at the present time is one called the Committee on Grammatical Nomenclature. This committee specifically states that its aim is to establish terms and definitions which shall be acceptable to all grammarians. In fact, this committee wishes to extend these definitions until they become international. No one realizes better than those of us who have had actual experience in the field of vocational education that here too there is a babble of tongues. The "Tower of Babel" itself is no more noted for its confusion than are the definitions and meanings which consciously and unconsciously are given the terms concerning vocational education. To be sure these definitions cannot be permanently established by fiat; nevertheless some of them are becoming fixed by usage. How many of us are agreed upon the definition of pre-vocational education? To some it may mean any education which precedes education for a specific end; to others it may mean only that education which immediately precedes the vocation; while to still others it may mean an education which shall give the youth an acquaintance with several occupations at the same time that he is acquiring the necessary three R's. The need is apparent. Hence our first proposition is the granting

by the National Society for the Promotion of Industrial Education to the N.E.A. the use of such definitions as are becoming fixed and have been made by this society and the authorization of such members of this society as are members of the N.E.A. committee to unite with the N.E.A. in attempting to determine upon fairly permanent definitions. Among its other duties, this committee purposes to confer with the Bureau of Education, the Bureau of Labor, the state boards of education, with manufacturers' associations, with labor organizations, and other interested societies for the purpose of arriving at a common meaning and definition of terms, to the end that these several organizations shall adopt these terms as definitions for their general use in connection with vocational education.

This whole movement of vocational education must have as a secondary result some influence upon the ordinary schoolroom routine. The permanency and general value of that influence will depend largely upon the fundamental principles which form the foundation of this work. Hence, as a second opportunity for co-operation, may we not set up that of a preparation and acceptance of a somewhat uniform code of principles and policies which should govern the introduction of vocational education into any school system, showing also its relation to present general education. Those already set up by this society for state systems and for policies in teacher-training may well form the basis for this new code. New experiences and a wider acquaintance with the actual conditions will no doubt compel us from time to time to modify this code. Nor should this prevent our real purpose of preparing a statement of what we believe to be a sound basis for the establishment of this work in any community.

In the preparation of any handbook upon this question, there constantly arises the necessity for a decision upon some debatable issue. In the actual undertaking of the work of vocational education, these issues are to a greater or lesser degree determined by local conditions. Some of these issues, as unit or dual control, the types of vocational education which are possible, the short unit course versus the balanced course, have not yet been agreed upon with sufficient unanimity to actually make effective a statement

made by our committee alone. To be sure some of these issues are agitating communities which are anxious to establish some form of vocational education. In fact there seems to be a wide divergence of opinion in regard to many of these questions. It would seem then one of the most valuable offices which this vocational committee could perform, would be a settlement of its opinion regarding some of these most pressing issues. With that in mind, a third opportunity for co-operation between the National Society for the Promotion of Industrial Education and the committee of the N.E.A., may well be a pronouncement upon these issues which shall carry with it the strength of both organizations. While such a pronouncement may not be generally accepted, it will furnish the basis for intelligent discussion and open the way for actual profit by experiment of the procedure involved.

As indicated in the resolutions of the N.E.A., the work of this committee was to be concerned chiefly with young persons between the ages of fourteen and eighteen years of age. The vocational education assigned for consideration by this committee is more particularly part-time and continuation-school work for persons of this age. There is however, a large field of pre-vocational education and later trade education which still remains to be considered. That this pre-vocational education should be made a definite part of the accepted school curricula for the upper grammar grades is gaining wider acceptance constantly. There are, however, young men and young women who are desirous of pursuing a trade education beyond the age of eighteen years. These persons may be those who are already at work and have tried to supplement their knowledge by utilizing the correspondence school, they may belong to that class of young people who left school before they actually knew their own desires, or they may be those who realize that they want and need only an opportunity. It would seem that this society could well supplement the work of the committee of the N.E.A. by a bulletin upon this latter type of education, including in such bulletin the need for such instruction, the agencies at work to provide it, and the conditions under which a community would be justified in undertaking it. As to pre-vocational education it may well be left to a subsequent committee of the N.E.A., inasmuch

as it is more general in its nature, and correlates more closely with the work of the present-day school.

Another very important service which could be rendered this committee by the National Society would be the making available to our use much of the material regarding schools established, legislation accomplished, legislation proposed, etc., for the work under our consideration. It is not the desire of this committee to supersede or appropriate the splendid work already accomplished by this National Society. It is rather our purpose to survey the field and to tell those for whom our handbook is intended the source of needed information. We have no inclination to fall into the error of adding to the present extensive duplication of effort but rather to put our energy into the preparation of a useful handbook from which all interested in this work may find that definite help which they so much need during this constructive period. To avoid such duplication of effort, we invite the co-operation and assistance of the National Society in our efforts to present a report, and through it a program, which shall be at once helpful and authoritative.

In conclusion, may we express the belief that in the not distant future what has been an agitation and source of discussion concerning vocational education during the past ten years, will in the next decade become crystallized and generally accepted as fact and necessity. So much so that the several states and municipalities will consider vocational education one of the most useful parts of their educational program. Such a reality is possible only through the united effort of all interested parties, social workers, educators, employers, and employees. To this end should the National Society for the Promotion of Industrial Education, representing as it does the layman, both employer and employee, and the older organization, the National Education Association, representing the public school, unite for the purpose of making such education most effective.

THE EFFECT OF CONDITIONS OF SCHOOLROOM HEATING AND VENTILATING ON SCHOOLROOM ATTENDANCE[1]

CHARLES H. KEENE, M.D.
Buffalo, New York

The following report concerning "The Effect of Conditions of Schoolroom Heating and Ventilating on Schoolroom Attendance" is based almost entirely on the amount of absence from various classrooms during the past school year. The percentages reported are the percentages of absence, so that a high percentage shows a condition of poor attendance. Other things being equal, the attendance in a classroom is a fair index of the health conditions in that room, particularly when the attendance of one room in a building is compared with the attendance in other rooms of the same building or district, of the same or nearly the same grade.

We have in our city about twenty-one so-called portable buildings, which are really one-room school buildings heated and ventilated by means of a jacketed stove, so arranged that cool air from the outside enters the room about the base of this stove, is heated, rises to the upper part of the room, spreads over the room, settles, and is withdrawn from the room by a gravity foul air duct, the room-opening of which is situated at or near the floor level. This is really a gravity system, with the addition that the teachers are at all times allowed to open classroom windows if they wish. As a matter of common observance, most of them do wish to frequently. The conditions in these rooms are practically always good. The "school odor," which is so commonly present in schools ventilated by the usual ventilating system, is practically never present. In these portable rooms, the teachers are almost universally pleased with the conditions. We have frequent requests from grade-school teachers to be transferred to these rooms, but very rarely

[1] Read at Fourth International Congress on School Hygiene, Buffalo, N.Y., Wednesday, August 27, 1913.

do we find a teacher in one of these rooms desiring to be transferred to a large building.

The writer of this report does not wish to advance any particular theories, but simply wishes to set forth a series of figures based on the actual attendance. Such a report, covering only one year, must necessarily be in the nature of a preliminary one.

The average absence by grades was figured for the lower three grades separately, as most of the portable buildings contain some one of these grades. The average absence for all third grades in the city was 3.64 per cent, for all the second grades was 3.84 per cent, for all the first grades was 4.73 per cent.

Before going into the body of this report, which is mainly upon these portable buildings, I wish to speak of school No. 1. In one room of this building, a fourth-grade room, certain experiments were carried on under the supervision of the engineers, whereby every child was given a supply of air directly in front of his face, which was supposed to be properly humidified and to have the proper amount of oxygen and ozone. The records for the year show that the average absence from this room was 4.29 per cent, whereas the average absence in the ordinary rooms of the fourth and third grades in this building was only 3.09 per cent. So far as I have been able to find out, no records were kept of the gain in weight of the children of this room as compared with the gain in weight of the children of other rooms, so that about the only basis of judgment as to the healthfulness of these rooms depends upon the average amount of absence. The artificial conditions thus obtained seem, therefore, to be detrimental.

As regards the main topic:

School No. 2 had six portables located in the school yard, three fifth grade, two fourth grade, one third grade. The average absence for these portables was 3.71 per cent; the average absence for the whole building, not including these portables, was 3.82 per cent.

School No. 3 had one portable annex, a first-grade room having an average absence of 3.02 per cent, as compared with the average first-grade absence for the whole city of 4.73 per cent.

School No. 4, a group of four isolated portables, had an average

absence of 3.9 per cent. The average absence of the nearest large building, school No. 5, was 5.46 per cent. Taking the comparative figures for these rooms by grades, the third-grade portable rooms had an average absence of 3.73 per cent, while the third-grade absence in the large building was 5.7 per cent; the second-grade absence in the portables was 2.68 per cent, in the large building it was 5.15 per cent; the first-grade absence in the portables was 5.55 per cent, in the large building it was 5.72 per cent. These figures are universally in favor of the portable buildings; moreover, many of these children had a long distance to travel over streets lacking sidewalks and proper breaking out in snow time, so that the large amount of absence in the first grade, which is in excess of the average for the city, is to be expected.

School No. 6 was a group of two portables in the same school district, even more inaccessible than the above group. Its second-grade absence was 5.26 per cent as compared with 5.15 per cent in the large building, and its first-grade absence was 5.66 per cent as compared with 5.72 per cent in the large building.

School No. 7 had two portables adjacent to the building, containing third and fifth grades. Their average absence was 4.05 per cent, as compared with the average absence for the whole building of 3.75 per cent. These seem to be the only rooms in the whole group of portables, having access to a warmed and proper toilet, which have an absence in excess of that for the nearest large building. The cause for this I have been unable to discover.

School No. 8, a single isolated portable of the first grade, shows an average absence of 5.08 per cent as compared with the absence for the nearest large building in the first grade of 4.39 per cent. Here the children were obliged to use an unheated, outhouse toilet, which undoubtedly accounts to some extent for the large percentage of absence.

School No. 9, a group of three portables containing from the first to the fourth grade, had an average absence for the first grade of 4.01 per cent, as contrasted with the 4.73 per cent for all the first grades of the city. The average for all three of these portables was 3.12 per cent. The average absence for the nearest large building for the lower three grades was 3.15 per cent.

School No. 10 was a group of four portables in a very isolated region lacking sidewalks and proper snow breaking, containing first and second grades. The average absence was 5.53 per cent. This apparently high average is undoubtedly due to conditions outside the classroom, as the parents objected very strongly to the outdoor toilets which were necessary here. This undoubtedly forced up the percentage of absence.

School No. 11, a group of two portables in an isolated region, contained first and second grades. The average absence for the group was 4.10 per cent. The nearest big building had an average absence in its first and second grades of 4.33 per cent, while the absence for the first and second grades of the whole city was 4.32 per cent.

School No. 12 had one portable, a third grade, in the school yard. This is a Jewish district, and the percentage of absence is very high, owing to holidays and other things over which school conditions have little control. The average absence for this particular room, however, was 6.75 per cent; for all the third-grade rooms in this building it was 7.97 per cent; for all the grades in the building it was 8.64 per cent.

In summarizing, we find that the figures are in favor of portable buildings in every case, except at schools Nos. 7, 8, and 10. The cause of the poor showing of the latter two has been discussed. It may be said that other conditions have caused this favorable result in attendance. This might be if only one or two of these portables were considered, but when the results are so markedly in their favor throughout the city, it seems fair to assume that there is something in the buildings themselves that makes their conditions more healthful, and the only condition in these portable buildings that varies from those in the large buildings is the method of heating and ventilating.

Whether this improved condition is due to the jacketed stove or to the benefit of opening the windows at any time, it is hard to say. My personal belief is that it is very largely due to the latter.

In addition to these portable buildings handled on a gravity jacketed-stove system, we carried on in our schools three open-window classes. In these rooms a whole grade of children is placed

in a room whose windows are kept open, there being put in the lower sash a cheesecloth screen to prevent direct draft, and the temperature of the room is maintained at about 55°. The children are allowed to wear extra wraps if they desire, but they are given no extra nourishment, nor is the routine of the class in any way changed. They are not selected in any way whatsoever, except that we obtain the consent of the parents before putting a child into this room. We simply say to the parents of the children in a certain room in the building, "Are you willing that your child shall enter a room similar to the above?" Practically all of them are, and we then open the windows and put in a cheesecloth screen.

In school No. 13, the absence for this open-window class, which was started about February 1, varied as follows: From November 1 to February 1, when the room was run as an ordinary classroom on a supposedly modern, fan plenum system, the average absence was 5.3 per cent. On February 1, the windows were opened and cheesecloth screens installed. The average absence from February 1 to May 1 dropped 3 per cent. The teacher of this class in a recent letter states that "the establishment of this room was highly satisfactory and beneficial in many ways. . . . . We had, throughout the remainder of the winter, the best attendance I have ever had in an entering room. The air was at all times fresh and invigorating, and we are hoping to be allowed the privilege of continuing its use next year." During this time, February 1 to May 1, the average absence of the other first-grade rooms in this same building was 5.3 per cent, which is considerably above the average for the city.

Another of these open-window rooms, a fourth-grade room, was opened about February 1 in school No. 14. The average absence in this room from September 1 to February 1 was 2.37 per cent. The average absence in the room from February 1 to May 1 was 2.88 per cent, an increase of 0.5 per cent. In the other fourth-grade rooms in this building, the average absence from September 1 to February 1 was 5.11 per cent, and from February 1 to May 1 was 6.21 per cent, an increase of over 1 per cent. All the third-grade rooms in this building from February 1 to May 1 had an average absence of 4.28 per cent, and the average absence for the whole building during the time was 3.66 per cent.

In school No. 15 one of these open-window rooms was opened a year ago last March. Its effect was so pleasing that it was continued during the whole of the school year just passed. Owing to an epidemic of measles, the average absence was high, 4.01 per cent, but even this is considerably below the 4.73 per cent, which is the average for all first-grade rooms in the city. These children were kept in the room throughout the year. Their weights were taken on November 1, January 1, and May 1. For purposes of comparison, the weights were taken in two other first-grade rooms in the same building. The children in these latter rooms made an average gain of 1.45 pounds; the children in the open-window room made an average gain of 1.85 pounds, which is 27 per cent more gain than was made by the children in the ordinary first-grade rooms.

We have known for some years that children put in open-air classrooms and given extra rest and diet, as has been done for tubercular and sick children, will improve remarkably in their general condition and make marvelous gains in health. During eighteen weeks in our open-air school in Minneapolis, the children made an average gain of 3.3 pounds; two of them gained over 9 pounds; one gained 6.6 pounds and made a double promotion in that time. We have not known, however, whether this increase in weight was due to the type of curriculum, to the rest, to the open air, to the increased diet, or to all these combined. It seems fair to assume, however, from these comparative weights, that a very large proportion of the gain is due to nothing but unadulterated, fresh air, which is neither baked nor stewed.

Some things are worthy of further study. (1) Will these conditions of better attendance in classrooms heated by jacketed stoves, where the teachers have the privilege of opening the windows, continue through a series of years? (2) this we purpose to examine into more carefully during the coming school year: Does the gain in weight of the children in this type of schoolroom compare favorably with the gain in weight of children of like grade and circumstances, in ordinary schoolrooms ventilated by the fan system? We have seen remarkable gains in weight in open-air schools and our recent work shows very favorable extra gain in open-window classes.

SOME EXPERIMENTS IN HIGH-SCHOOL INSTRUCTION

I. M. ALLEN
High School, Wichita, Kansas

Directors of schools of education have always insisted that the high schools themselves are to be the great laboratories in which are to be worked out the intricate and difficult problems of secondary education.

Public-school men, however, are slow to look upon themselves as experimenters, or to consider the public-school buildings as clinics in which the pupils are subjects for experimentation.

This hesitation is justifiable, too, for are not school administrators hired to *operate* a system established at an enormous expense for the benefit of millions of children? The experimenter in education, with his subject, or the training-school director with his small group of children, may perform his experiments *ad libitum*. If the experiments go wrong, it is well, for an error discovered is one step in the evaluation of truth, and the catastrophe that ensues causes no commotion in educational circles. But let the same experimenter adjust improperly his educational wrench to the elaborate machinery set up in the so-called public laboratories, and a roar will mount to high heaven.

This, however, only proves that our experimenter must be possessed of skill and the experiments be so conducted as to eliminate wholesale catastrophe in case of maladjustment; in other words, the trained supervisor must localize and definitize his operations. He will not attempt to experiment upon a curriculum or upon a school, but upon a subject in a curriculum, and upon a small group of pupils within the subject.

Unless we are to assume that educational progress is at variance with the basic laws of advancement in all other human activities which hold that truth is evaluated from error, organization evolved out of confusion, and progress attained by the spiral route of retreat and forward march, we school men will have to consent to do some-

thing more than *operate* a system. It may become our business to break the system in parts, even at the expense of breaking our own heads on the rocks of incrusted tradition.

Acting on this theory, that experiments under proper limitations are justifiable within public-school buildings, the following experiment in the teaching of elementary science in the Wichita High School is here described.

REASONS FOR UNDERTAKING THE EXPERIMENT

Two years ago the traditional course in physical geography was displaced by a course in elementary science. The reason for abandoning the physical geography lay in the conviction that the course was too bookish and that the accompanying laboratory work was too repetitious and meaningless. Higgins' *First Book in Science* was used, and although the book may be as good as any on the market for such a course, the results at the end of the year were far from satisfactory. The Freshmen had dipped a little into physical and biological sciences, but there was no real training in science.

This year the instructor was told to write his own course, which he had printed on sixty-five lesson leaves. These lesson leaves were handed out to the pupils one at a time. At the bottom of the leaves were a few suggestive questions. There was no claim that the instructor had written a better lesson than some of our standard authors, indeed not as good, but it was a lesson that he could teach better, because it was his *own* and he had included only such material as he deemed important.

REASONS FOR USE OF THE LESSON LEAVES

In brief, the reasons for this method of assignment may be stated as follows: (1) to focalize attention on a few central facts and principles; (2) to encourage the pupils to think upon the short assignment of principles rather than to memorize textbook content. Elaboration and detail were to *follow* rather than precede or accompany the statement of principles; (3) to afford time for assimilation and application by cutting down the amount of content to be recited upon.

LESSON 61. "Forces"

All changes in the physical world depend upon matter and energy. By matter is meant anything which occupies space, and by energy is meant any agent which produces or tends to produce a change. Any agent which produces a change in any portion of matter must exert some force on that matter. Force may be defined then as the sole cause of motion. In simple language a force is a push or pull.

The force which is the most real and the best known to us is muscular force. Other forms of force are the force of gravity, mechanical forces, molecular forces, electrical and magnetic forces.

When a person lifts a weight, the force that raised the weight is a muscular force, but the force that he is acting against is the force of gravity. The force of gravity is a universal force, i.e., it acts between all objects in the universe and it acts all of the time. The force of gravity is always a pull, not a push. The best examples of mechanical forces are seen in their applications, the steam and gas engines. Another example of this is the breaking of water pipes in cold weather caused by the freezing of the water. A mechanical force is any force exerted by one object on another, caused by the expansion or the contraction of the object.

Molecular forces are those forces acting only between molecules and at very short distance. The distance through which a molecular force will act is less than 1–1000 of the thickness of a pin point. If this force acts between like molecules, such as two molecules of sugar, it is called the force of "cohesion." If this force acts between unlike molecules, such as one of sugar and one of water, it is called "adhesion." Molecular forces are always forces of attraction. Water is drawn up in plants by the molecular forces. If a stem of a leaf is placed in red ink, the veins in the leaf will soon become of a red color. A towel left with one end in a dish of water and the other on the table will transfer the water from the dish to the table in a short time. The last two phenomena are called "capillary attraction" but they are caused by molecular forces.

If a body is charged with electricity and is then brought near another body it will exert a force on the other body. This is shown by rubbing a piece of hard rubber on flannel and then touching it to pieces of paper. If two bodies are thus charged they will repel (push apart) each other. This shows that electrical forces may exert either a push or a pull.

If two magnets are brought near each other they will either repel or attract each other showing the twofold character of magnetic forces. Magnetic forces are natural forces as are all the rest, and many natural magnets, called lodestones, are found in Asia Minor.

QUESTIONS FOR REFERENCE WORK

1. Why does any object have weight?
2. Why does a stone fall to the ground after being thrown upward?

3. Why does the moon keep up with the earth on its way around the sun?
4. Define the force of gravity.
5. If the sun has an attraction for you, why do you stay on the earth?
6. Why does water stick to glass when mercury does not?
7. What holds pieces of iron together by welding?
8. Why must iron be heated before it can be welded?
9. Why can lead, wax, etc., be welded without heating?
10. Why is iron more tenacious than wood?
11. Why would you expect solid (frozen) mercury to be tenacious?

These lesson leaves were filed in a loose-leaf notebook together with the notes, drawings, and description of the experiments performed in connection with the lesson.

The instructor was inexperienced and undertook this method of treatment at the suggestion of his principal, but was in perfect sympathy with the plan. At first he was under the impression that he must cover a lesson a day, thereby defeating the very object of the experiment, viz., to take enough time to develop thought work in science. He soon, however, grasped the point of view that he was to stay on a lesson until the pupils had "warmed to it," even if he covered, during the semester, only half of the lesson leaves.

The pupils in this class were Freshmen, and had had no nature-study or science in the grades. The average age of the girls was 15.6 and of the boys 15.7. The course ran for one-half year and was elective.

This much for the history, purpose, and method of the experiment. Next follows a stenographic report of a day's work upon the barometer. The stenographer was sent into the room without warning to the teacher, and the following account is a verbatim report. Two things will be noted: first, the informal and problem method of treatment; second, the absolute requirement of the teacher that the pupils express themselves in sentences. A sentence is a statement of thought; therefore how can beginners think clearly in science unless they habitually express themselves in sentences?

This particular lesson herein reported had been preceded by two other lessons on the barometer. The class knew how the barometer was constructed; that air had weight; that atmospheric pressure held up the barometric column; and why. They had also previously studied the component gases of the atmosphere,

knew each gas had an atomic weight, and knew that atomic weights were stated in relative terms.

LESSON. FOURTH PERIOD CLASS. ELEMENTARY SCIENCE, MARCH 12, 1913

MR. SCHELL, *Teacher*

Teacher: We wish today to discover how the barometer is used to indicate a change in the weather. You probably all know that it is so used, but possibly some of you can tell just how. For instance, we say that the change in the weather is indicated by the rising and falling of the mercury column of the barometer. Now, I don't wish you to learn that fair weather makes it rise or fall, as the case may be, but I wish you to know what makes the barometer rise or fall and what relation that has to the weather. To answer that question, we shall have first to determine which is heavier, dry air or damp air. I shall not tell you, but how many think damp air is heavier than light air? (Every hand went up.) Well, we shall make it our business to find out.

Teacher: Don, suppose you and I were going to take a trip in a balloon, and we wanted to take some statistics on certain phenomena of the atmosphere, what instruments would we take along?

Don: We would have to take along a barometer.

Teacher: What would be the use of taking along a barometer?

Don: We could tell how high we went, what the pressure of the atmosphere was, and how high we were.

Teacher: Explain that.

Don: The higher we went, the barometer would go down. There wouldn't be as much pressure because the air wouldn't be as heavy.

Teacher: Then it is the atmospheric pressure which causes the barometer to go up and down the number of millimeters. Suppose we start our balloon trip at sea-level, what will be the reading of the barometer at sea-level, John?

John: It will be 30 inches.

Teacher: Just what do you mean by that 30 inches? Can you explain? How could we measure the 30 inches on this barometer? It would be from what point to what point?

John: From the bottom of the barometer.

Teacher: What do you mean by the bottom of the barometer? Measure from here? (Indicating.)

John: I don't know about that one. I was thinking about one that would come down straight.

Teacher: This is just like the straight barometer.

John: You measure from the bowl.

Teacher: (Drawing diagram on blackboard.) We see the mercury is up to here. From what point would I measure this 30 inches?

John: From the top of the mercury.

Teacher: Now we haven't had that, but John reasoned it out. I would measure up here and find the point here, and the distance up here would be 30 inches at sea-level. Suppose we go up to a height of about 16,000 feet above sea-level; what do you suppose would be the reading there?

Pupil: About 18 inches.

Teacher: And how do we account for that difference? Of course it will go down in this case to about 18 inches (marking on diagram).

Pupil: The air the higher up you go is lighter and not so much pressure. It is the pressure that keeps the mercury up there, and there not being so much pressure on it, it won't be up so high.

Teacher: That is right. What becomes of this mercury we have lost from 30 inches to 18 inches, William?

William: When the mercury goes down in the tube, it goes down in the bowl. It is supposed to be big enough to hold all the mercury in the basin.

Teacher: Can't you make it a little more definite?

William: When the mercury falls from 30 inches to 18 inches in the tube, it will go down in the basin.

Teacher: What will?

William: The mercury.

Teacher: Try it again.

William: When the mercury falls from 30 inches to 18 inches in a barometer, the mercury goes down into the basin.

Wayne: If the mercury goes down in the basin, that raises the level of the mercury and then you would measure from a different point.

Teacher: You see this attachment here? I will explain that later. When I am measuring this, there is a screw that comes right to the surface. This screw forces this plate up. You get this needle exactly on top of the mercury and you get your readings equal. I will explain this more fully later. So the barometer is an instrument used to measure atmospheric weight and pressure. We shall now get to our original question? How are we going to tell the effects of the weather by this barometer? I want to get just one fact we will have to know before we can tell these weather conditions. What is that, Margaret?

Margaret: Before you can tell the weather conditions, you want to know which is heavier, dry air or damp air.

Teacher: In what way would we go about to tell whether damp air was heavier than dry air, Clarence?

Clarence: I don't know.

Teacher: We had it yesterday. Jack Stewart.

Jack: We take the cylinder that holds 20 ounces.

Teacher: No. What would you say we use, William?

William: Cubic inches; we fill that with some kind of gas.

Teacher: Suppose we take this cylinder here (indicating). Does it have anything in it?

William: Air.

Teacher: Suppose you wanted to take the gases in there, just take the two important gases; what would they be?

William: Nitrogen and oxygen are the two important gases in there.

Teacher: Continue your discussion.

William: Weigh the jar containing nitrogen and oxygen or the ordinary atmosphere. Now run in some steam or water vapor, and then weigh the jar again. The jar would now be lighter.

Teacher: That would be one proof. Suppose you didn't have a way to weigh these gases?

William: You could figure it out by the atomic weight of the gases.

Teacher: Explain how you would go at that.

William: Both the nitrogen and oxygen have a molecular weight of a little over 28.8.

Teacher: Answer this first. What is an atom?

Pupil: An atom is the smallest division of matter.

Teacher: It might be defined in that way. Give another definition.

Francis: An atom is a part of a molecule.

Teacher: What can we say about the atom, William, in relation to weight?

William: One atom of hydrogen equals "1," and atoms of different gases are measured in relation to hydrogen.

Teacher: Do you suppose it would be possible, Frank, to measure the weight of one atom?

Frank: No sir, it would not.

Teacher: Why not?

Frank: Because it would be too small.

Teacher: It would be too small. Molecules are very small, and when you come to know that molecules are made up of atoms, you can see how small atoms are. We say a hydrogen atom equals "1." We can find the weight of the others in relative terms. How is it I find nitrogen atoms and oxygen atoms in the air?

Dorothy: The air contains much oxygen and nitrogen. It is made up of oxygen and nitrogen.

Teacher: What part of it is nitrogen and oxygen?

Dorothy: There is nearly 80 per cent of nitrogen in the air and about 20 per cent of oxygen.

Teacher: Those are the percentages, but suppose I wanted to divide that gas. Suppose I take oxygen gas and want to divide the gas. What am I going to divide it into? What are the parts? What are the names of the parts I want when I perform this division?

William: You can measure the atom.

Teacher: The atom would be a part then, would it?

William: Yes.

Teacher: How do we find this nitrogen gas and oxygen gas in the air?

William: You find it in molecules composed of two atoms.

Teacher: Make a definite statement about nitrogen and oxygen, William.

William: I don't understand what you mean.

Teacher: Make a definite statement of what you said.

William: We find nitrogen and oxygen composed of two atoms in each molecule in the atmosphere.

Teacher: So I can write it like this—N_2O_2. Those atoms have such a great affinity for themselves, they go in pairs. Sometimes we find oxygen in three atoms. In a case like that, we have what, Lloyd?

Lloyd: Ozone. We have three atoms of oxygen to form ozone.

Teacher: What is the difference between oxygen and ozone, Clarence?

Clarence: Ozone is a form of oxygen. There isn't very much difference between them.

Teacher: A good deal of difference. What is the formula for oxygen?

Clarence: O_2.

Teacher: Walter?

Walter: O.

Teacher: What about it?

Walter: O is the formula for oxygen.

Teacher: What is the formula for ozone?

Walter: OH.

Teacher: You aren't thinking; we just took that up. If O is the formula for oxygen, what is the formula for ozone?

Walter: Ozone is composed of three atoms.

Teacher: Three atoms of what?

Walter: Oxygen.

Teacher: Hou would you write it?

Walter: O_3.

Teacher: What is the difference between O and O_3? You can see from the formula what the difference is.

Francis: There is three times as much.

Teacher: Make the statement.

Francis: The difference between ozone and oxygen is there is three times as much oxygen as ozone.

Teacher: What description shall we give to ozone to show what form of oxygen it is?

Mary: Ozone is a concentrated form of oxygen gas.

Teacher: We have these two together: nitrogen and oxygen, N_2O_2, and William has said 28 was the molecular weight. What is the formula of aqueous water or water gas, Ruby?

Ruby: H_2O.

Teacher: What is the formula for ice?

Ruby: H_2O, I suppose.

Teacher: Have you changed it any?

Ruby: No; only as to form.

Teacher: What is the formula for liquid water?

Ruby: H_2O.

Teacher: What would be the molecular weight of H_2O or common water-vapor gas, Victor?

Victor: It would be 18.

Teacher: How did you get it?

Victor: The molecular weight of water vapor would be 18.

Teacher: How do you get it?

Victor: One atom of hydrogen is the standard weight; then there are two atoms of that and the oxygen weighs 16 times the weight of the hydrogen.

Teacher: How much oxygen weighs 16 times as much? You didn't take any unit.

Victor: One atom of oxygen weighs 16 times one atom of hydrogen.

Teacher: Then you have 2 plus 16 equals 18. I want someone to tell me now the reason. We know, as Dorothy has given us, air is composed of four-fifths nitrogen and one-fifth oxygen. Suppose I take one-fifth part of water gas and put in this cylinder; explain the phenomena. What is going to happen, Arch?

Arch: The water gas will be bound to force some of the other gases out and leave one-fifth water vapor.

Teacher: How do you know that?

Arch: Because you can't put more—when anything is full, some of the gas has to be forced out if you force some other gas or vapor in there.

Teacher: Yes, that is the point. It is one of the fundamental laws of science and Arch has given it in his own words. If I have 20 cubic inches of gas in here, no matter what kind, I can't have any more than 20 cubic inches. You can have just so much gas in a certain space, according to volume, and that is all you can have. I take and place in here water vapor. What is going to be the effect? Suppose I have another cylinder. I say I keep this cylinder and have it full of regulation air, N_2O_2 and the molecular[1] weight is 28. I take another cylinder and take out this one-fifth of air and substitute water vapor for the air. What is going to happen as to the relative weights, Ione?

Ione: The last one will weigh less on account of the water gas being in there.

Teacher: Make your statement again.

Ione: The cylinder which contains water vapor will not weigh as much because the water vapor gas doesn't weigh as much as N_2O_2.

Teacher: You mean to say that this cylinder here does not contain any gas?

[1] The teacher recognizes that it would not be allowable for a chemistry pupil to say—"the molecular weight of air, air being a mixture"; but it was thought best not to be too technical with Freshmen.

Pupil: Yes it does.

Teacher: Talk about some gas then. What are you going to have in this cylinder? What three gases? Johnnie, what are you going to have?

Johnnie: Nitrogen, oxygen, and water vapor will be in there.

Teacher: Now explain, Ione. In this cylinder I have taken out a part of the nitrogen and oxygen and forced in some water vapor. I want a statement about the relative weights.

Ione: The relative weights would be ———

Teacher: Aliff, you give that.

Aliff: The jar containing the nitrogen and the oxygen and the water vapor would weigh less than the other jar.

Teacher: That is all right. Now, why?

Aliff: The water vapor isn't as heavy as the atmosphere.

Ione: The one with the water vapor and the nitrogen and oxygen wouldn't weigh as much as the other because the water vapor doesn't weigh as much as the nitrogen and oxygen.

Teacher: Yes; we are going to have a difference of 10 in the molecular weight if we put this water vapor in. What does this experiment prove, Newton?

Newton: This experiment proves that air has weight.

Teacher: Is that what it proves to you? What do you think about it, Susie?

Susie: It proves that dry air is heavier than wet air.

Teacher: We don't call it wet air; we use another term.

Susie: Damp air.

Teacher: We had several pupils last term whom I worked with a week before they would give up. If there are any here who don't see it, I would be glad to take it up with them. We have shown what here, Newton? (Newton is a colored boy and one of the slowest in the class.)

Newton: We have shown damp air weighs less than dry air.

Teacher: We come to this question: What effect has that on the barometer? You have heard people say, "the barometer has gone down today," "the barometer has gone up today." What does that indicate in regard to weather? What do you think about that, Bess? I will help you out just a little. Yesterday the barometer read 28.91 inches over here on this vernier. On this vernier it read 744 millimeters. You remember the condition yesterday; we had a good deal of sun and it was a nice, bright day. Now, today it is cloudy, we probably have a good deal of water vapor in the atmosphere. Can you see any connection between these two forms of weather and the barometer?

Bess: The barometer would go down because the air is damp today.

Teacher: Why would the barometer go down?

Bess: The damp air doesn't weigh as much.

Teacher: How do you know the damp air doesn't weigh as much?

Bess: Because the molecular weight of H_2O is less than the molecular weight of atmosphere or N_2O_2.

Teacher: Then if that is true, why does the mercury column fall?

Bess: Because there isn't enough pressure in the damp air to hold the mercury up to where it was yesterday.

Teacher: Fine. That is correct.

Teacher: Montie, you come and read this barometer. This plate (indicating) is movable. We have to have the screw at the top of the mercury. Here you will find millimeters and here inches. How many inches do you have, Montie?

Montie: We have 28 inches.

Teacher: In reading this vernier, read to get tenths and hundredths.

Montie: It reads 28.67 inches.

Teacher: Is there any difference in the reading from yesterday and today? What is the difference, Newton?

Newton: The difference is 0.24 inches.

Teacher: How did you get it, Newton?

Newton: By subtracting 28.67, the reading of today, from 28.91, the reading of yesterday.

Teacher: What does that show?

Newton: That the barometer has fallen 0.24 inches.

Teacher: What does that show about the weight of the air?

Newton: It shows damp air is lighter than dry air.

Teacher: Why, Newton?

Newton: Because the mercury column has fallen 0.24 inches.

Teacher: But why has it fallen?

Newton: It has fallen because the air wasn't heavy enough to hold it up to 28.91, where it was yesterday.

Teacher: Good! That is what we have worked two days to show.

SUBSEQUENT ASSIMILATIVE TESTS UPON THE LESSON OF MARCH 12

It becomes necessary to explain what is meant by an *assimilative* test. An assimilative test is one that ascertains what knowledge has become one's *own* rather than what content can be *remembered* of someone else's knowledge. The ordinary tests given in the high schools are of the latter type. Assimilative tests necessitate a sufficient interval for forgetting and exclude antecedent reviewing and cramming. Teachers do not like to give assimilative tests because the *showing* is not good. Yet it is submitted that everyday adult life is necessarily a series of assimilative tests or the using of the knowledge and power that one has made his own.

Some eight weeks subsequent to the recitation herein recorded, the principal, without warning, went into this particular class in elementary science and asked them to write on the following question: "The barometer read yesterday 29.63. Today it reads 29.47. You also remember that yesterday was a clear day and that today it is cloudy. Does this show that the air is heavier or lighter than yesterday, and why?"

The following is a tabulation of the results of the written test:

No. in Class	No. Answering "Lighter"	No. Answering "Heavier"	Percentage Correct	No. Giving Good Reasons	No. Giving Incomplete Reasons	Percentage Correct
26	25	1	96	19	7	89

Here follow some of the answers received which were checked as complete.

William Mc.: The air today is lighter than it was yesterday because of the water vapor in the air. The molecular weight of air is 28.8 and that of water vapor (H_2O) approximately 18. Yesterday there was not much water vapor in the air, consequently the air was heavier. Today we have water vapor, or a lighter gas, in place of some of the heavier air.

If a jar is left open without anything but air in it, the molecular weight of its contents is 28.8. If steam or water vapor was run into this jar at the top, it would push some of the air out and would take its place. The weight of the resulting mixture would be lighter.

Margaret D.: The air is lighter today than it was yesterday because there is more water vapor in the atmosphere today. Water-vapor gas is lighter than air because H_2O has a molecular weight of 18 and N_2O_2, or atmosphere, of 28.8. This makes water vapor lighter. When we measure air we measure the different gases which are contained in the atmosphere and we find that water-vapor gas is lighter than N_2O_2. When air is warm it becomes heavier but when it is cool, it becomes lighter.

Aliff B.: The air was heavier yesterday than today because there is more H_2O in the air today. H_2O is a very light gas. When there is more H_2O in the air in a certain locality, the other gases are pushed back to make room for H_2O. The space that is taken up by the H_2O today was taken up yesterday by the heavier gases. Damp air is heavier than dry air. This causes the mercury in the barometer to fall. That is why the reading is lower today than yesterday.

Ruby G.: The air is lighter than it was yesterday because damp air is lighter than dry air. Yesterday was clear while today is cloudy and the

atmosphere is full of water vapor. One might think that damp air was heavier than dry air, but the molecular weight of H_2O is less than of N_2O_2, or the atmosphere. Therefore on damp days the barometer registers much lower than on dry, clear days. There is not so much pressure on the mercury in the barometer, which makes it register lower.

COMPARATIVE ASSIMILATIVE TESTS ON IDENTICAL AND FOREIGN MATTER

One might be inclined to say that if 90 per cent of an elementary science class, without warning, give complete and correct answers on subject-matter covered two months earlier, that the success of the experiment had been demonstrated. It did not seem, however, to those interested, that the experiment was complete, because we had gathered no comparative data. In order to get this comparative data, the same question was given on the same day to a class in physics consisting of twenty-one Senior girls. This class had studied the barometer as it is treated in physics, and under a teacher more experienced than the teacher of elementary science. True, this class had had these lessons on the barometer several months prior and were now toward the end of the course, but as stated before, it was the purpose of this exercise to test assimilation rather than memory. The result of the test is here given.

PHYSICS CLASS

No. in Class	No. Answering "Lighter"	No. Answering "Heavier"	Percentage Correct	No. Giving Good Reasons	No. Not Giving Good Reasons	Percentage Reasons Correct
21	4	17	19	2	19	9.5

The following is a typical specimen answer given by most of the girls in the class:

Marian: The air is damper today than yesterday, therefore the air contains more water than it did yesterday. Air has weight; water has weight and it is heavier than air, therefore air which contains more water will weigh the more. Therefore the air today is heavier than the air was yesterday and the barometer fell.

Tabulating the two tests, we are confronted with the following figures:

	No. in Class	Percentage of Right Answers	Percentage of Right Reasons
Freshman elem. science	26	96	89
Senior physics	21	19	9·5

The difference favoring the Freshman science class is surely overwhelming. As far as these tables go, the experimenter was convinced that pupils could be trained to think in the field of science. The exceptional tendency of pupils to really think, unless so trained, is clearly shown in the Senior girls' answers to this question, "Is the air lighter or heavier today?" Granted that their teacher had never pointed out to them that dry air was heavier than damp air (which most people would not assume), they should have known by the barometric readings given them that the pressure had diminished and consequently that the air must have become lighter.

Two conclusions can here be postulated: First, assimilative tests are severer than the usual memory tests of the schools. Such tests are not based on recent matter or matter recently reviewed. They always involve application of principles and test the power to think rather than the power to recall. Second, to develop the power to think takes time. High-school courses should be intensive rather than extensive.

The small percentage of failures in the elementary science class is due mainly to the emphasis laid upon thought processes and the reduction of the content matter of the lesson, giving more time for the development of thinking power.

ASSIMILATIVE TESTS IN MATTER FOREIGN TO THE EXPERIMENT

To demonstrate that the ordinary percentage of failures runs high on an assimilative test, the following tests in Freshman algebra were given in the same school and included many of the elementary science pupils. The tests were given over a period of several non-consecutive days in the seventh month of the school year and were questions involving principles of algebra rather than its mechanics. Several months had intervened between the teaching of the principles and the giving of the tests. All possibility of review or memory-stuffing was eliminated. The questions were:

I. In removing the terms from within a minus parenthesis in the following problem, why do you change the signs? (Do not quote rule but give reason for rule.)

$$a-(b+c-d)$$

II. (*a*) $21n+2=15+8n$ (1)

$21n-8n=15-2$ (2)

Explain how (2) is derived from (1).

(*b*) $2ab=x$

$b=?$

Explain how you find the value of b.

III. $\frac{x}{4}+\frac{x-6}{6}-\frac{1-2x}{8}=\frac{55}{8}$ (1)

$6x+4(x-6)-3(1-2x)=3.55$ (2)

Explain how (2) is derived from (1).

IV. $11t+5(2t-1)-3(2+2)$

Check for $t=2$.

V. Find product in two ways where possible:

(*a*) $(8-2)\ (8+2)$

(*b*) $(a-b)\ (a-b)$

TABULATION OF RESULTS

	Possible No. Correct Answers	No. Correct	Percentage Correct
Algebra:			
Teacher 1	205	77	32
" 2	120	72	60
" 3	124	96	78
" 4	115	81	72
" 5	116	86	74
Total	680	412	60.6
Elementary science	26	94	89
Physics	21	19	9.5

Failures of 40 per cent on simple algebraic principles like the foregoing may appear high, but the author of this experiment is firmly convinced through successive exercises of this kind that it will not run much lower in other schools, providing the experimenter makes certain that the test is given under the same conditions, viz., made assimilative in content and manner of testing.

CAN AN ATTITUDE OF MIND BE DEVELOPED?

Granting that the experiment thus far shows that Freshman pupils in a science class conducted on the plan outlined rank well

in an assimilative test, there remains one other question to answer. Did pupils in such a class tend to get an attitude of mind? Could they reason in other sciences as well or better than older pupils not so trained?

The remainder of the experiment is connected with this phase of the question. Six Freshmen who had been over the course in elementary science conducted on the plan herein described, were selected at random one day and without warning, and put into a physiology class made up of Juniors and Seniors. This class was taught by the same teacher. The teacher, according to instructions, took up an entirely different section of the physiology, many lessons in advance. The topic was "The Chemistry of Respiration" (Conn and Buddington, pp. 200–205). He conducted the recitation that day on the same informal plan as he conducted his elementary science classes. A stenographic report of the recitation was taken, but is not given here because of its length. The Freshmen who had been introduced into the class for this day did not know that they would be called in the next day to take a test upon the subject-matter discussed, nor did the regular class know that they would refer to this lesson again, in fact they were assigned for the next day the regular portion of the preceding text. No hint of the coming test was given to either group, so as to eliminate as far as possible the element of memory. The next day the same six Freshmen were re-summoned to the physiology class and the following questions were given for all to write upon:

1. Follow the components of the air breathed into the lungs.
2. Account for the different colors of the blood.
3. What is the function of oxygen in the body?
4. How is the temperature of the body maintained and its energy produced?

Following is a tabulation of the results:

	No. Examined	Average Percentage Attained
Freshmen	6	90
Junior-Senior	6 (best)	87
Junior-Senior	23 (remainder)	73.6

A few of the answers here follow:

JOHN J. (Freshman), Grade, 95 per cent (one of the best students in the class):

1. When air is taken into the lungs the different components are oxygen, nitrogen, hydrogen, and all the elements. Oxygen is taken up by the blood and carried through the body. Nitrogen goes into the lungs with the oxygen and comes out with the waste matter or the burnt-up tissue.

2. When the oxygen enters the blood it turns to a scarlet because it is pure or does not contain any waste matter and when the blood is returning, it is blue because it is loaded with the refuse of the burned-down tissue.

3. Oxygen unites with the haemoglobin of the red corpuscles and burns carbon in the cells, which forms heat. The purpose of the oxygen is to burn up waste matter.

4. The temperature of the body is maintained by the continual burning of the oxygen in the tissues. The energy produced is heat energy which goes to produce muscular energy.

ROMEYN W. (Junior), Grade, 90 per cent:

1. When air is taken into the lungs the oxygen in the air is taken up by the haemoglobin in the blood. The nitrogen remains the same and comes back to the lungs and is exhaled.

2. Blood containing oxygen is a bright scarlet and blood containing CO_2 is a bluish-red. The scarlet blood is loaded with new material and the bluish-red is loaded with waste material.

3. Oxygen unites with the carbon in the tissues to build up the body.

4. The temperature of the body is maintained by the oxidization of the tissues of the body and heat is liberated for energy.

SELDEN K. (Freshman), Grade, 60 per cent:

1. The haemoglobin takes up the oxygen and the lungs hold the nitrogen.

2. The oxygen affects the color of the corpuscles in the blood and makes the blood bright scarlet. The oxygen makes them bright red but when it has carbon dioxide or waste, it becomes blue.

3. Oxygen unites with the carbon of the tissue for the purpose of burning the tissues of the body to get the waste matter out of the way.

4. The temperature of the body is kept up by the burning of the tissues and the energy of the body comes from the heat.

CONCLUSION

Our experiment is now concluded. Summarized, our aim was to teach science to Freshmen in such a way as to develop thought power and to secure if possible, a liking for science. The method was informal. Questions were put by the teacher and answered by the pupils always in sentence form. Accuracy and clearness

were insisted upon. The pupil must stick to the *problem* until he had solved it and knew that he had solved it. Lessons were supplemented with experiments performed for the most part by the teacher. These experiments were written up and subject to explanation by the pupil at any time on demand. No definite number of lessons had to be covered. Sixty-five were written, embracing important topics in physics, chemistry, and biology, and about fifty were covered. The tabulation of statistics on comparative tests shows:

> First, That in an assimilative test in elementary science, about 90 per cent of the pupils were correct in their answers. It is not believed that memory was the important element in the test as every precaution was taken to eliminate it.
>
> Second, In a similar test given to a Senior physics class, only 10 per cent were correct.
>
> Third, In an assimilative test upon Freshman algebraic principles about 60 per cent were correct.
>
> Fourth, In ability to comprehend and assimilate a new topic in science, six Freshmen, selected at random from the elementary science class, trained for one semester under the plan outlined, were compared with a class of Juniors and Seniors taking physiology, and it was found that the Freshmen were superior to the upper classmen.

The foregoing conclusions while not fully substantiated at least convince the author of the experiment, first, that all knowledge, to be of possessory character, must be *assimilated* or *made one's own;* and second, that this assimilative stage can best be reached through the informal problem method of the classroom and as exemplified in the experiment herein set forth.

The truth of these two statements seems to be incorporated by Professor Moore of Yale in a recent number of the *School Review*, in his splendid article, "Improvement in Educational Practice":

> First, Knowledge is no ready-made outside thing which by any conceivable legerdemain can be put inside the mind; on the other hand, the mind is not so constituted that it can take strength by being exercised on the forms of knowledge. To make knowledge, the student must do as its original discoverer did; he must rethink it, remake it. It makes no difference what Moses thought or Plato thought or Euclid thought, until I think their thoughts for myself as my own. Science, history, literature, mathematics, all must be born anew in the mind of each student who studies them.

Second, If we employ the method of casting all that we would teach into the form of problems and of provoking our students to do the same, much is gained in making teaching a co-operative undertaking in finding; the mind is challenged, attention is focalized, work becomes definite and has an understandable purpose; searching is made necessary, valuing or selecting becomes the order of the day; what is found out and thought out is organized with reference to the problem, each student shapes and offers his contribution in his own words, and above all, each is thinking for himself upon matters of common interest, which is the only valuable training of individuality.

The title of this paper was styled: "Some Experiments in High-School Instruction," and its author intended to give a brief account of one or two applications of high-school instruction in departments other than science organized on the problem-solving basis—but time does not permit.

For instance, in civics, we have localized our work until we now have in pamphlet form the important problems connected with the history and development of our city. This is putting civics into concrete and tangible form. In history, we have discovered that the work must be intensified and problemized.

The underlying principle involved in all this is the conviction that high-school instruction must be intensified rather than extensified, or problemized rather than topicized. In the recent number of *History Teachers' Magazine*, Professor Sellery of the University of Wisconsin says: "In the assignment do not give a number of topics pupils are to concentrate attention upon, but a number of questions they are to answer. This trains judgment in the very process of acquiring the facts of a textbook."

For two days the pupils in the elementary science class had the problem, "How does the barometer indicate weather changes?" How this method of attack promoted the assimilation or the remaking of knowledge for each pupil has been described. We hold with Professor Moore, finally, that the prime object of education "is to make people use their minds, and if they are constrained to use their minds, they will inevitably use them on the greatest concerns of life—morality, citizenship, culture, and productive activity. Or, if education seeks first the knowledge of the spirit, all things else may be added unto it."

DISCUSSION

EFFECT OF THE NON-REQUIREMENT OF LATIN FOR GRADUATION UPON THE LATIN CLASSES OF THE HIGH SCHOOL

This paper simply brings before you the statistics relating to the study of Latin in the Alliance high school and some inductions therefrom. I undertook this study to satisfy myself regarding the status of Latin in the high school and the effect of the non-requirement of Latin for graduation upon the high-school enrolment as well as upon the quantity and quality of the Latin enrolment.

I have confined the statistics to the ninth and tenth grades for the following reasons: (1) because Latin has been elective at the beginning of the third year in high school since 1906–7, so has had no direct bearing upon the enrolment above the tenth grade since that date; (2) because the measure of those who pass from the ninth into the tenth grade gives a figure from which it is possible to approximate the number that will remain in the high school; statistics show that the percentage that drop out during the first year or at its close, is approximately the percentage that drop out during the remaining three years of the course; (3) because time enough has not yet elapsed since Latin was made entirely elective to measure the product of the third and fourth years. This subject was made elective only in September, 1910.

In 1904–5,	48	entered	9th	grade;	26	of these	entered	10th	grade.
In 1905–6,	42	"	"	"	22	"	"	"	"	"
In 1906–7,	57	"	"	"	26	"	"	"	"	"
In 1907–8,	33	"	"	"	20	"	"	"	"	"
In 1908–9,	43	"	"	"	31	"	"	"	"	"
In 1909–10,	63	"	"	"	30	"	"	"	"	"

From these figures it appears that 286 students entered the high school, and of these 286, 131 dropped out of school, for various reasons, before the tenth grade was reached, leaving 155 pupils, or 54 per cent of those entering the ninth grade who survived it. During this period everyone entering the ninth grade was required to take Latin.

In 1910–11 Latin was made elective, and Latin, manual training, or domestic science could be taken during the first two years in high school. Four points in language are now required for graduation and all students intending to enter college for classical training are urged to carry at least three years of Latin. But the four points required for graduation may be either German or Latin. The following are for the years since the change was made:

In 1910–11, 50 entered 9th grade; 35 of these entered 10th grade.
In 1911–12, 59 " " " 41 " " " " "
In 1912–13, 53 " " " 39 " " " " "

From these figures it appears that 162 pupils entered the high school, and of these 162, 47 dropped out, for various reasons, before the tenth grade was reached, leaving 115 pupils, or 71 per cent of those entering the ninth grade who survived it.

Comparison of this percentage, 71, with that when Latin was compulsory, 54, shows a gain of 17 per cent of the enrolment remaining in high school when Latin is elective.

Again, under the compulsory Latin régime from 1904 to 1910, 286 students carried the Latin and of these, as given before, 54 per cent made satisfactory passing marks and entered the Caesar class.

From 1910–11 to 1912–13 inclusive, the time during which Latin has been elective, the following are the figures relative to the Latin classes:

In 1910–11, 30 entered 9th-grade Latin; 23 of these entered Caesar.
In 1911–12, 30 " " " " 22 " " " "
In 1912–13, 26 " " " " 24 " " " "

This gives a total of 86 entering the ninth-grade Latin class and 69, or 80 per cent, surviving to enter the tenth-grade Latin class. Comparison of this with the 54 per cent when Latin was compulsory, shows a gain of 26 per cent. That is, of those who entered the ninth-grade Latin, 26 per cent more survive the first year than when all were required to take the subject.

Again, using the figures heretofore given, we find that the percentage entering the Caesar class from 1904 to 1910 was 54 per cent of those entering the high school. From 1910 to 1913 the number entering the high school was 162, and the number entering the Caesar class was 69, or 42 per cent of the enrolment—a loss of 12 per cent on the enrolment to the second-year Latin class. Thus with a loss of 12 per cent to the second-year Latin class we not only retained this 12 per cent but an additional 17 per cent to the second year of the high school.

The Latin, manual training, and domestic science teachers report that the work is exceedingly pleasant because the classes contain only the pupils that want the work. The Latin classes are smaller but are composed of students who want the Latin, and the hand-minded pupils are granted the privilege of taking what appeals to them and that in which they can make good. Our Latin teacher gives the following as the good results of making Latin elective: (1) The discipline is much

easier as the uninterested, and therefore restless pupils are not in the class. (2) There is a greater sympathy and oneness of purpose between the teacher and pupils bringing about a higher quality of work. (3) Better results are secured from a less amount of energy expended. (4) More ground can be covered in the given length of time.

The conclusions to be drawn from this study are as follows:

1. That making Latin elective has decreased about 50 per cent the number of students entering the ninth-grade Latin class but that the second-year classes are only 12 per cent smaller than before.

2. That this decrease is accompanied by, and compensated for, by an increased number remaining for second-year high school, which means a corresponding increase remaining throughout the high-school course, 71 per cent now remaining as compared with 54 per cent before.

3. Better satisfied students, better satisfied instructors, and much better quality of work as a whole.

W. R. PATE
Superintendent of Schools

ALLIANCE, NEBRASKA

NOTE.—In answer to the question, "Do you feel that you had opportunity to eliminate other causes for increased attendance in the high school," Mr. Pate replies: "I know of no other cause for increased attendance other than a general increase in high-school attendance all over this state during the last few years. There has been little change in the faculty; to be sure, some new teachers have come in from time to time but only in such manner and number in the last three years as heretofore; and there has been no change in the course of study other than that noted in the paper. The school activities, also are practically the same as in former years—activities in athletics, literary productions, etc. Every child under sixteen years of age is compelled by law to attend school and this law is enforced, but not more rigidly during the last three years than for three or more years previous to the last three years.

"You will note by the statistics that the average number entering the high school is very little larger during the last three years than before that time, but the surprising feature is the greater percentage *of the entering number* who remain for tenth-grade work. You will note throughout that all percentages are based on the *entering* number, hence any increase in the entering number would decrease the percentage remaining unless a correspondingly larger number should remain for tenth-grade work. The average number entering the high school during the last three years is 54 as against 48 for the six preceding years. This slight increase is probably due to the increased number of people in the school district."—THE EDITORS.

EDUCATIONAL NEWS AND EDITORIAL COMMENT

Meeting of the Department of Superintendence, Richmond, Virginia, February 23–28, 1914

The officers are: President, Ben Blewett, superintendent of instruction, public schools, St. Louis, Mo.; Vice-Presidents, W. E. Ranger, state commissioner of schools, Providence, R.I., and A. S. Cook, superintendent of Baltimore County schools, Towson, Md.; Secretary, Anna E. Logan, Ohio State Normal School, Oxford, Ohio.

President Blewett has prepared the following tentative program:

Tuesday evening—

Address of Welcome

Response

"Sociological Questions in School Co-operation," Edward T. Devine, sociologist, New York City. Paper to be supplied.

Wednesday morning—

"Distinctions between Vocational and Cultural Education," David Snedden, commissioner of education for Massachusetts, Boston, Mass., and William C. Bagley, professor of education, University of Illinois, Urbana, Ill.

Wednesday afternoon—

"Part Time, Continuation, Shop, and Trade Schools," R. J. Condon, superintendent of schools, Cincinnati, Ohio; H. P. Hughes, superintendent of schools, McComb, Miss.; F. W. Thomas, supervisor of apprentices, A.T. & S.F. Ry., Topeka, Kan.; Lewis Gustafson, superintendent of Ranken School of Trades, St. Louis, Mo.

Wednesday evening—

"Condition of Rural Schools," presented by U.S. Bureau of Education.

"Hopeful Experiments" (20 min. papers), Mabel Carney, Normal, Ill.; Josephine C. Preston, state superintendent of public instruction, Olympia, Wash.; Susie V. Powell, Jackson, Miss.; Cora Wilson Stewart, Moorhead, Ky.

Thursday morning—

"The Foundation of Educational Achievement," Edward L. Thorndike, professor of educational psychology, Teachers College, Columbia University, New York.

"Report of Committeee on Economy of Time in Education," H. B. Wilson, superintendent of city schools, Topeka, Kan.; J. F. Hosic, head of English Department, Chicago Normal College, Chicago, Ill.; W. A. Jessup, director, School of Education, University of Iowa, Iowa City, Iowa.

Thursday afternoon—

ROUND TABLES

"State and County Superintendents," Chairman, Augustus L. Downing, first assistant commissioner of education, Albany, N.Y.

Cities over 300,000 Population, Martin G. Brumbaugh, superintendent of schools, Philadelphia, Pa.

Cities 25,000 to 300,000, Ernest O. Holland, superintendent of schools, Louisville, Ky.

Cities under 25,000, Eli E. Bass, superintendent of city schools, Greenville, Miss.

Thursday evening—

"Determinants of the Course of Study," A. Duncan Yocum, professor of educational research and practice, University of Pennsylvania, Philadelphia, Pa.; John W. Withers, president, Harris Teachers College, St. Louis, Mo.

Friday morning—

"Rural Schools in New York," John H. Finley, commissioner of education, Albany, N.Y.

"Rural-School Administration," a collaborated paper by Ellwood P. Cubberley, professor of education, Leland Stanford Junior University, Stanford University, Cal., and Edward C. Elliott, director, course for the training of teachers, University of Wisconsin, Madison, Wis.

The officers of the National Council are: President, Robert J. Aley, president of the University of Maine, Orono, Me.; Vice-President, James Y. Joyner, state superintendent of public instruction, Raleigh, N.C.; Secretary, W. B. Owen, principal, Chicago Normal School, Chicago, Ill.

President Aley proposes to hold a session of the National Council on Monday evening, February 23, at which reports will be received from various members on the subject of "Health Problems of the American Public School." The Tuesday morning session will be devoted to the work of the committee on "Standards and Tests of Efficiency." The Tuesday afternoon program has not yet been formulated.

Outlines of the programs of the Normal School and School Administration Departments have not yet been received.

Other Educational Meetings

In addition to the above the following organizations will hold meetings during the week at times when they will least interfere with the programs announced above:

National Society for the Study of Education.

Society of College Teachers of Education.

National Committee on Agricultural Education.

Educational Press Association of America.

National Council of Teachers of English.

Conferences of State Superintendents of Education and of Teachers of Education in State Universities with Commissioner Claxton.

Conference of Teachers in City Training Schools.

American School Peace League.

International Kindergarten Union.

National Congress of Mothers and Parent-Teacher Associations.

School Garden Association of America.

National Association of Collegiate Registrars.

National Council of Education and the Departments of Normal Schools.

School Administration of the National Education Association.

The official headquarters will be at the Hotel Jefferson, and the hotels Murphy and Richmond will be utilized for headquarters for commercial exhibits. Most of the meetings will be held in either the city auditorium, high school, or the Hotel Jefferson.

There is much in the neighborhood of Richmond having historical significance. A project is now on foot to run a special train to Hampton where the Hampton Normal and Agricultural Institute, the Alma Mater of Booker T. Washington, one of the largest schools for Negroes in the United States can be visited. The Institute offers to serve a dinner to the visitors if arrangements can be made for such a trip, the cost of which will be from $1.50 to $2.50, depending upon the number in the party. Hampton is located on Hampton Roads, the scene of the famous fight between the "Merrimac" and "Monitor," and is only a few miles from Fortress Monroe at Old Point Comfort. The details will be worked out before the Bulletin is issued containing a program of the meeting.

The question of railroad rates is in a fair process of settlement. The Southeastern Passenger Association, in whose territory Richmond is situated, has granted an open round-trip rate at practically 1½ cents a mile. They have made a tender to the adjacent passenger associations, and we are hopeful that a solution will be reached under which a repetition of the trouble at Philadelphia will be impossible.

The School Situation in Chicago

John D. Shoop, formerly assistant superintendent of schools in Chicago, was elected to succeed Ella Flagg Young by the vote of the

Board of Education, December 10, 1913. It is asserted that the opposition to Mrs. Young is the result of a long-continued political cabal and that many months ago a campaign had been begun to unseat her. Late last spring the ill-feeling came to a head. It took the form of an action on the part of the board to ignore a recommendation made by Mrs. Young concerning a spelling-book. The superintendent asserted at that time that certain textbook agents attempted to bully her, and raised the old cry of textbook graft. Finally, in July, came Mrs. Young's resignation. This was followed by a great number of petitions, chiefly from organizations of women, addressed to Mayor Harrison and demanding that the resignation be refused. Mr. Harrison brought pressure to bear upon the board, the resignation was not accepted, Mrs. Young reconsidered, and again entered upon her duties.

The present action seems to have been entirely unexpected by the public. At the board meeting of December 10 the question of the election of a superintendent came up in the regular order of business; two names, Mrs. Young's and Mr. Shoop's, were put in nomination. Against vigorous protest the majority of the board insisted on the legal right of a secret ballot. The vote as taken showed ten votes for Mrs. Young and six for Mr. Shoop, with four members not voting. Mrs. Young immediately withdrew her name, saying that the superintendent who needs more than one ballot to elect her would not have the necessary support. After this withdrawal the board proceeded to elect Mr. Shoop.

At this action Mayor Harrison professes to be very indignant. The board members are all his appointees. He has written five of the men who opposed Mrs. Young that he accepts their resignations. It appears that before Mr. Harrison appointed these men he obtained from each of them a written resignation; these resignations he now proposes to accept. However, the five men decline to be thus ousted from the board, and propose to fight on the ground that their letters of resignation, placed in the hands of the mayor before the appointments were actually made, are illegal. The men argue that it is impossible to resign a position before one actually holds it; that in reality the mayor has not the power of removal; and that the removing power is entirely in the hands of the state.

In the meantime Mrs. Young has accepted another position, and Mr. Shoop has entered upon the duties of superintendent. On December 12, the *Chicago Tribune* announced that Mrs. Young had agreed to become "educational editor"; on December 14, her salutatory address to the

public appeared. Mr. Shoop has thus far paid no attention to vigorous expressions from the mayor, nor to strong resolutions calling on him to resign. These resolutions were passed by a tumultuous mass meeting held December 13 in the Auditorium Theater. The will of this gathering of women's organizations expressed itself in two other resolutions: one calling on the mayor to insist upon the re-election of Mrs. Young; the other calling on Governor Dunne to summon an extra meeting of the legislature to do two things: first, to make the school board elective instead of appointive; and second, to make a "recall" possible for recreant members of the board who "may prove traitors to public sentiment."

While the sentiment of the public so far expressed seems to favor Mrs. Young, it is significant that the Chicago Principals' Club, the majority of which are men, passed the following resolution:

> "WHEREAS Mr. John D. Shoop has been elected superintendent of Chicago public schools,
>
> "*Be it resolved*, That we, the members of the Chicago Principals' Club, extend to him our loyal support; that we express confidence in him as a man and as an educator, and that we pledge ourselves to support him in his administration of the public schools."

This resolution was, to be sure, passed by a divided vote.

This is the status as the *Review* goes to press (December 15). The schools of Chicago are in the midst of an unseemly wrangle. The animus of the contending parties, their personality, and their individual interest are of exceedingly minor importance. What is of supreme importance is that there may come, as soon as possible, to the superior school system and to the excellent teaching force of the schools of Chicago, peace. If to secure peace, to eliminate personal bickerings and jealousies, it becomes necessary to remove one or two or twenty individuals, this ought to be done. Harmony under sane leadership is the pressing need.

LAY VS. EXPERT CONTROL

New York City still discusses the never-solved, and under present conditions unsolvable, problem of the division of functions between the lay school board and professional workers. Schoolmen maintain that the board, as representative of the general public, should determine principles of general policy by way of making clear the public demands; that it should embody such policy in the form of general legislation; that it should choose men capable of carrying out in detail the work it outlines in general terms; that it should vote the material means of carrying on

the work, but leave the expenditure to those who are responsible for the work; that it should have power of veto as to policies proposed by the superintendent not covered by its general statements of policy; and, finally, that it should hold its expert agents responsible for securing the results aimed at by its general legislation. Beyond this, in the opinion of the schoolman, the board has no power to go; and therefore no right to attempt more. The problems relating to the adjustment of educational details are too complicated for untrained hands. They require a wealth of technical information and a skilled professional judgment that the layman cannot hope to have. Each detail of the courses of study, of the methods of work, of grading and promotion of children, of equipment, supplies, and textbooks, of the qualifications of teachers, can be understood, and the necessary adjustments made, only in the light of this large body of technical information which the layman cannot possess. After telling the expert what he wants done and giving him the supplies necessary, the layman will have to leave it to the expert to secure in his own way the results that are demanded; reserving the right to dismiss him from the service if he does not secure the results demanded, and to employ somebody who can and will do so.

On the other hand, the layman is quite skeptical as to even the existence of educational experts. Really in his heart he looks upon those who claim expertness as but pseudo-experts. The protagonists of the school board view in New York City claim that for the eleven years since the passage of the 1902 charter the experts have had full sway, and that the results have been the large inefficiency shown by the reports of the recent investigation. They assert that not only must the board determine matters of general policy and supply funds, but also that it must exert itself actively in school affairs relating to courses of study, textbooks, teachers' qualifications, and all the rest, in order to enforce efficiency on the part of the so-called experts. It must initiate details because of the inertia of professional officials in doing so. It must "interfere" in professional matters, since this is necessary for enforcing professional efficiency. As the representative of the people, it has been made responsible for securing efficiency in every aspect of the school work.

Now, as a matter of fact, this New York school board has never understood the nature of its larger functions, nor has it ever attempted to perform them, much less perform them efficiently. No school board in the United States has ever attempted to define general policy in sufficiently exact and definite terms to show to the experts of the school

system just what it wanted done. Vagueness and inefficiency in expressing what the public wants and needs have been the rule, that has as yet no exception in the country. An expert contractor, being told to build a house, but without being given any architect's plan to show the results which he must aim at securing, is not likely to construct a satisfactory building. Neither will a school superintendent without some such definite statement of what is wanted. The school board has a sufficiently large task on its hands yet unperformed. If it will do this, it perhaps can then enforce effectiveness on the part of its expert agents, just as a builder can enforce satisfactory work on the part of his agent contractor without continually interfering in the details of the work.

J. F. B.

Faculty Advisers

The *Champaign* (Illinois) *News* announces that the students of the high school are assigned in groups to the special care of faculty members; each of the women teachers is the adviser for about thirty girls, and each of the men, mentor for the same number of boys. This step, in line with the movement begun in a few other cities, has been taken because the administrative officers are unable to keep in close personal touch with all of the pupils in a school of 500.

That the great majority of school children, high-school pupils, college and university students are in constant need of sensible advice cannot be doubted. To realize this need one has only to reflect what an inadequate perspective average young men and young women have. They do not look far into the future. They do not see how important are the years of youth for the years of maturity. They do not realize that scope of the labor they will be able to perform in the productive period of their lives is largely determined by the use they make of the preparatory period. Moreover, when a youth does have ambitions, they are too often mere daydreams based on some snap judgment. And then, the average youth has no means of estimating his own capabilities; he may think that he has the native tastes and capacity for a certain profession, when in reality he is totally unsuited for the special object of his ambitions.

What are the various parts of our educational system doing to meet this need? Unfortunately, very little. In the great majority of homes the attitude is, "We keep the children in the schools as long as we can; let them find out there what they are good for." Few parents deliberately study their children to determine where their best possibilities lie.

Now it is quite possible that in the elementary school there is really no need of advice. There are certain necessary fundamentals which it is the duty of the elementary schools to teach. In the high-school period, however, we find that the variety of training offered is a matter for serious consideration. Here are a Latin school and a manual-training school side by side. Under the same roof perhaps there are various and varying courses leading in widely differing directions. Teachers feel the need of giving sound advice at this point in a pupil's career, but have no real means of making a sure judgment. At best it is guesswork.

Follow into college the selected group which leaves the secondary schools. One might naturally suppose that during the first year or two in college some systematic and scientific effort would be made to determine what a boy's talents fit him for. But no, we are too busy with the routine of our classwork really to study the individual merits of the students. The result is that one can see in every university students in the law school who ought never to think of practicing law. We see dropped out of the engineering school boys who have to all intents wasted one year in finding out that they cannot hope to be engineers. Indeed it is the general rule, not the exception, that a student may go through ten years of schooling from the beginning of his high-school course to the end of his university career and never receive one thorough, scientific investigation of his real powers. Our educational system is based on the principle, Let the student attempt anything that he pleases. It is little more than a trial and error process.

It is to reduce to a minimum the errors of undirected school activities that the faculty adviser system is designed. The purpose is indeed commendable. The difficulty is that very few advisers are capable of giving counsel on vitally important matters. The faculty mentor may perhaps keep track of the pupil's grades and deportment; he may give some more or less useful advice as to what courses to elect; he may even talk about matters of a more intimate and personal nature. These are all worth while, and in themselves justify the admirable plan now being tried by the Champaign high school, by all private schools, and by most colleges. The fact remains, however, that as yet we have no real standards by which even the skilled adviser can render the most important advice of all. We have indeed certain tests by which a reasonably accurate judgment of a degree of feeble-mindedness may be determined. We are constantly making experiments to measure all sorts of educational problems. But we can number on one hand the trained

psychologists and students of pedagogy who are attempting to standardize tests by which fitness for the various life activities can be estimated, or who are tabulating those qualifications that will furnish a reasonable hope of success in medicine, in law, in teaching, or in any other profession. That educators are beginning to realize this need is indicated by the fact that former President Benton of Miami, now of the University of Vermont, planned to have a Dean to give his entire time to the scientific study of individual students. It is, moreover, a hopeful sign that one of the topics to be discussed in the next meeting of the American Psychological Association is "The Tests of College Freshmen," as projected by Reed College and by a few other institutions.

Because the problem referred to is vague, hard to limit, intangible, does not make it any the less necessary for an educational system that purports to be scientific. Let the colleges and the secondary schools, as soon as possible, fill the most important chairs of all, chairs to be occupied by *deans of men and of women*, deans whose business it is, not to keep track of the minutiae of grades and of conduct, mere clerical duties for the most part, but deans whose business it is to be able to give, after thorough and scientific investigation in every individual case, sound advice in regard to a student's potentialities. Such men and women will be worthy of the name "faculty advisers."

Student Government in the High School

In the Detroit Central High School and the Lake View High School in Chicago there are established two widely differing kinds of student self-government. Detroit Central, under the guidance of Principal David MacKenzie, has established a Student Court with elaborate court procedure. Twelve judges from the eleventh and twelfth grades are elected by popular vote of the student body. The court issues summons to any student upon its own motion, upon the request of the principal, or upon the request of any three students. The accused pleads, is tried by a jury, and is acquitted or convicted by a majority of three-fourths. Penalties are prescribed and inflicted by the presiding judge. The Lake View plan, inspired by Principal B. Frank Brown, establishes a commission of five members, each of whom presides over a large committee. The president of the commission is in charge of a committee on "morals, dress, courtesy, school spirit, and honesty." Under his chairmanship are thirty deputies, one in each room of the school. The four other committees, each presided over by a commissioner, are on

"attendance," on "school improvements," on "health," and on "safety." The plan of the commission is merely to counsel with offenders and to bring upon them the force of a united school sentiment, as expressed by the commission and ratified by the student body.

These two plans differ in several respects. One proposes to punish; the other to prevent. One establishes an elaborate system of procedure which seems likely to break down in the hands of immature officers; the other establishes a system of supervision that involves no great administrative difficulties. The Detroit Central plan appears at least to remove discipline from the hands of the school authorities; the Lake View plan, while allowing the students to establish for themselves general rules of conduct, and allowing them in case of necessity to pass judgment and even suggest penalties, leaves the disciplining power in the hands of the principal.

Any wise plan of self-government needs to be based upon at least three principles; first, the unanimous support of the student body; second, a careful limitation of jurisdiction to matters that may safely be left to the decision of immature minds; and, third, back of the student officers there needs always to be the full strength of school officials in the matter of enforcement. While student officers may establish rules of conduct, may try offenders, and suggest suitable penalties, the enforcing or punishing power ought to remain in the hands of the high-school principal. This last provision seems necessary both to insure the discipline of the school and to relieve the student officers of responsiblities they ought not to be called upon to assume.

The Use of a Score Card in Appraising Class Work

We print below part of a "classroom inspection card" used by the Ohio School Survey Commission. Samples of fifteen other cards used by the commission may be obtained from Dr. H. L. Brittain, director, Columbus, Ohio. The score-card method of measuring has many advantages when the object to be judged presents factors that can be estimated in definite units. A score-card method may be satisfactory to estimate the physical excellence of a schoolroom, for air and light and heat facilitites may be stated in recognized units. A score-card method is also satisfactory for a horse fair. Certain of the most important qualifications of a good animal may be estimated in pounds and inches. Yet even the expert in horses finds that there are some qualifications that have to be estimated roughly. On such points the score

SCHOOL	GRADE	H. S. YEAR	TEACHER	DATE

I—PERSONALITY OF TEACHER (Check √)

Illustrations

1 Teacher appears to be

vigorous	weak		
poised	nervous		
neat	slovenly		
at ease	embarrassed		

2 Voice is (Check √)

pleasing	harsh		
clear	indistinct		
low	high		

3 In her personal relations with pupils does she appear (Check √)

to stimulate	to suppress	courteous	rude
to win cordial cooperation	to antagonize	encouraging	nagging
		firm	weak
to be sympathetic	harsh	tactful	blundering
strict	lax	enthusiastic	diffident
even tempered	irritable	quick to react	slow to react
reasonable	unreasonable	quiet	noisy
tolerant	intolerant	systematic	disorderly
dignified	undignified	resourceful	dependent

Illustrations

II—THE RECITATION

Illustrations

1 No. of pupils in class appearing

to be interested		indifferent	
energetic		fazy	
independent		dependent	

2 Responses of pupils: No. giving

(a) fluent topical recitations
(b) word or phrase responses
(c) sentence responses
(d) incoherent responses
(e) failing to answer

3 No. of pupils in section

not reciting ____ reciting once ____ twice ____
three times ____ more than three times ____

4 No. pupils in room but not in reciting section

No. industrious ____ indolent ____
minding their own business ____
interfering with others ____

5 No. of pupils asking

pertinent questions of fact ____
relevant thought-provoking questions ____

6 Time lost (Check √ under yes and no)	Yes	No	No. Min.	Illustrations
(a) Calling class				
(b) Dismissing class				
(c) Distributing materials				
(d) Indistinct speech of teacher				
(e) Indistinct speech of pupils				
(f) Unnecessary talking of teacher				
(g) Unnecessary talking of pupils				
(h) Failure to have devices ready				
(i) Use of ill-adapted devices				

II–7 Teaching Ability as shown by	(Check √) Not at all	Slight	Medium	Notable	Evidence and Remarks
a Extent to which teacher's questions are					
(1) thought-provoking					
(2) calling for facts					
(3) suggesting the answer					
(4) answered by "yes" or "no"					
(5) irrelevant					
(6) not definite—vague					
b Extent to which material to recitation is					
(1) confined to text					
(2) within pupil's comprehension					
(3) related to children's lives and experiences					
(4) adapted to children's present or future needs					
(5) worth while					
c Extent to which the teaching					
(1) is rambling					
(2) is formal, mechanical					
(3) stimulates initiative of pupils					
(4) requires independent thinking					
(5) develops pupil's resourcefulness					
(6) requires cooperation of pupils					
(7) is fixed on essentials					
(8) requires pupils to organize material					
(9) utilizes children's experience					
(10) clears up pupils' difficulties					
(11) shows use of material in solution of present or future problems					

Teaching Ability	(Check √) E.	S.	M.	L.	Evidence and Remarks
d Extent to which pupils					
(1) had a clear idea of purposes of lesson					
(2) were self-reliant					
(3) tested their own solutions					
(4) acted and thought on their own account					
(5) cooperated with teacher and classmates					
(6) persisted in getting desired result					
(7) differentiated between essentials and non-essentials					
(8) organized their material					
(9) seemed well-grounded in previous work					

8 Was the Assignment	Yes	No
a. definite and clear?		
b. related to present lesson?		
c. such that the pupils were prepared to attack it intelligently?		
d. formal—from text book?		
e. by topics or problems?		
f. hastily made at dismissal?		
g. omitted?		

9 Correction of Essential Errors

(1) Describe method used

(2) Are non-essential errors too much emphasized?

(3) What record is kept of recurring errors likely to retard progress of pupils?

card is valuable to him only as a means of classifying his judgments; the classification may possibly make the judgments somewhat easier. In like manner, when a school inspector attempts to estimate the value of a teacher's work by a score card, he finds his chief help in the rough suggestions which classify the various judgments. Consider, for example, item 3, Personal Relations with Pupils. Seventeen tests are suggested to the inspector. With the sheet of classified judgments before him, he may be better able to form a fair appraisal of a teacher's class work.

Certain obvious difficulties and objections to the actual use of the card may be cited. First, the personal attributes of a teacher are far more difficult to estimate than are the various paces of a trotting horse; second, there are too many judgments suggested on a card for one or even for several visits; third, the card if rigidly followed fails to allow for some rare excellence that overbalances many shortcomings; fourth, if used in sight of the teacher, the card may be a great factor in making her self-conscious.

Most of these shortcomings can be avoided, however, and many good results may be obtained, by a wise use of the card. This wiser method the New York Bureau of Municipal Research evidently had in mind when they added at the top of the card these suggestive headings: *To Help Teachers Discover Their Own Strength and Weakness* and *To Help Supervisors Help Teachers Where Need Is Greatest.* In other words, put these cards into the hands of the teachers of a whole state, let them know that the qualifications of good teaching are summed up in convenient form for their study, and urge them to make estimates of their own success and failure. Do this and the great number of teachers will become more intelligent critics of their own work. It may readily be pointed out, also, that inspectors often go through their work in a perfunctory way, falling into the habit of looking for only a few excellences or defects. This card then in the hand of an inspector may be a decided check on his own peculiarities of judgment. Finally, it may not be out of place to suggest that the wisest use of the card might be made if the inspector and the teacher sit down together, place the card in front of them, and consider the various items, one at a time. Thus might be avoided one of the great causes of failure in ordinary inspection; namely, that the teacher herself receives little direct first-hand benefit from the inspector's judgments.

BOOK REVIEWS

Essentials in Early European History. By SAMUEL BURNETT HOWE. Longmans, Green & Co., 1912. Pp. xiii+417. $1.50.

This work is one of the very first to appear as Part I of the course in modern history suggested by the American Historical Association's Committee of Five, for high schools offering but a three-year course in history. Evidences of hasty preparation by both author and publishers are numerous. Some, such as the interchanging of the maps to illustrate the struggle between England and France for America, are inexcusable. Thorough testing of the work with classes, or even careful reconsideration of the phraseology, would have lessened many instances where statements puzzling, or even misleading, now appear. The assignment of forty of the four hundred pages of text to American Colonial history, while feudalism, which the author says "was, with the church, the all-powerful molder of the customs of the mediaeval people," receives, at best, but four, will doubtless meet with much disapproval. On the other hand, a well-illustrated chapter of some twenty-seven pages on "Life in the Middle Ages" will be hailed as a step in the right direction. The work possesses other merits, and there are sufficient evidences of promise to make it a matter of regret that the volume was prematurely sent forth in its present form, in which it can hardly be recommended.

V. L. M.

UNIVERSITY OF CHICAGO

Problems of Educational Readjustment. By DAVID SNEDDEN. Boston: Houghton Mifflin Co., 1913. Pp. vii+259.

Problems of Educational Readjustment is the title of a book of discussions of various aspects of the new education, essays which have previously appeared in magazine form. The first essay, "The New Education," introduces the series by showing how the development of modern science, the changed industrial order, and the spread of democratic ideals result in the present unstable situation. "The new education will obviously have to possess far wider and more purposeful aims; its range of adaptability will, of necessity, be immeasurably greater, its method must rest on a scientific basis; and its organization must become complex and flexible in order to produce an efficient combination of democratic control and technical direction."

The essays which follow outline some of the problems here suggested. "The New Basis of Method" pleads for a proper blending of the two methods now in vogue, namely that in which the "thing taught determines method"

and that in which "natural processes of learning claim attention." In answering the question, "What is liberal education" the author argues that the traditional liberal education does not serve modern needs and that "our teachers of the liberal arts, while holding their high ideals and conserving their refined interests and tastes, should keep themselves in vital contact with the world of people and of things in which their real worth is to be accomplished."

The chapter on "Why Study History" is a good exposition of the civic ideal in teaching and of how history may contribute to training in citizenship. Three chapters are devoted to problems of the curriculum, discussing, "The Practical Arts in Liberal Education," "Differentiated Programs of Study for Older Children in Elementary Schools," and "The Opportunity of the Small High School." In chaps. viii and ix, problems in connection with vocational education are taken up, the author showing some of the issues involved on the practical, social, and psychological sides of the subject. The book closes with a consideration of the advantages and disadvantages of "Centralized vs. [those of] Localized Administration of Public Education."

The author passes in rapid review many of the main problems of the modern educator. Manifestly he cannot solve them all and does not attempt it. The value of the book lies not so much in its solution of problems as in a clear statement of them.

ARTHUR C. BOYCE

UNIVERSITY OF CHICAGO

Modern Geography. By ROLLIN D. SALISBURY, HARLAN H. BARROWS, and WALTER S. TOWER. New York: Henry Holt & Co., 1913. Pp. 418.

Modern Geography is a simplification of *Elements of Geography* by the same authors and is a response to the demand that geography should teach the relationship of life, especially human, to the natural environment. The authors hold that "the chief object in geography teaching should be preparation for everyday life, for citizenship in the widest sense." Hence they have sought, "(1) to make the text explanatory rather than merely descriptive, so that it may afford training in clear thinking; and (2) to emphasize the relationships of earth, air, and water to man's activities and interests, so that the knowledge gained may be directly useful." Two chapters deal with "Earth Relations" and "Relief Features" and five chapters with "Nature and Functions of the Atmosphere," "Climatic Factors," and "Storms and Weather Forecasting." Three chapters are devoted to the climates of the tropical, intermediate, and polar zones, followed by four chapters on the "Oceans," "Materials of the Land and Their Uses," "Changes of the Earth's Surface Due to Internal Forces," and "Modification of Land Surfaces by External Agents." The remainder of the text treats such modern phases of the subject as "Mountains and Plateaus and Their Relations to Life," "Plains and Their Relations to Life," "Coast-

Lines and Harbors," "Distribution and Development of the Leading Industries of the United States," and "Distribution of Population; Development of Cities."

This book will be a disappointment to the teacher who is looking for a catalogue of life-responses or for disconnected chapters dealing with such responses only. Every chapter is a veritable storehouse of life-relations. These relationships are woven closely into the discussion of physical features so that the student cannot fail to appreciate the logical sequence of cause and effect. The student is led to see the great importance of geographic science to human affairs. Fine print has been used, to a limited extent, to add a wealth of illustrations of life-responses without unduly enlarging the text. This feature will be appreciated greatly by the teacher whose library facilities are limited, and it is far superior to the old method of incorporating this material in disconnected chapters. Most of these illustrations are new to a high-school text. Throughout the book there are woven into the discussion such sentences as the following: "Dry-farming depends partly on the principle that if evaporation from the soil is checked, even scanty rainfall (15 inches yearly) may suffice for hardy crops like wheat." "Many young rivers are interrupted by falls and rapids which afford water power for manufacturing, but interrupt or prevent navigation. . . . . The waters of the Colorado River can be used for irrigation only in the upper part of the river system, or below the Grand Canyon, and the larger irrigation projects of southern Idaho are related definitely to breaks in the walls of the deep canyon of the Snake River." "Much of the land of the broad flood-plains of old rivers is swampy and of little use until drained, but is then of great fertility (Why?)." "The pastoral nomads of semi-arid plains have always been marauders and conquerors, though less so than the men of the desert. Under favorable conditions, their growing herds and flocks require more and more pasture, and from time to time compel them to move beyond the boundaries within which they formerly had roamed. . . . . A long and severe drought, resulting in less pasturage and a failing water supply, or disease among their animals, may bring them to the verge of famine, and drive them to pillage and conquest."

Other features of the book are well-selected illustrations which are closely associated with the text, an excellent collection of maps, and a series of questions at the end of each chapter. These questions differ from the usual type in that they are really problems in geography and are certain to arouse discussion. The work is truly an epoch-making text marking the end of the old pure physiography as now taught in most high schools, and the establishment of geography as a distinct and definite science. Its influence in the next decade will be far reaching, not only in giving a true conception of geography but in stimulating clear thinking.

GEORGE J. MILLER

STATE NORMAL SCHOOL
MANKATO, MINN.

Repertorium der pädagogischen Literature der Jahre 1906–1911. By GEORG PFEIFFER. Leipzig: Teubner, 1913. Pp. 104. M. 2.00.

This pamphlet is an index by subjects and authors of the annual review of educational progress, the *Pädagogische Jahresschau.* It is very useful to those who may have access to this publication.

FRANK N. FREEMAN

UNIVERSITY OF CHICAGO

Review Questions and Problems in Chemistry. Compiled by M. S. H. UNGER, A.M., Headmaster of St. John's School, Manlius, N.Y. New York: Ginn & Co. (no date). Pp. v+106.

This is a collection of questions and problems, grouped under twenty-six chapters, which are to be used as an aid in reviewing the theories and laws, and, it may be added, the facts, of elementary chemistry. The questions "have been taken from the most recent college, College Board, and Regents of the State of New York examinations, and from the latest and most authoritative textbooks." In using the book, the student must seek any necessary information from his textbook. No answers to problems are given. There are now several books of this kind available, and this one seems good of its kind.

ALAN W. C. MENZIES

OBERLIN, OHIO

Theoretical and Physical Chemistry. By S. LAWRENCE BIGELOW, PH.D., Professor of General and Physical Chemistry in the University of Michigan. New York: The Century Co., 1912. Pp. xiii+544. $3.00.

"This book . . . . is addressed to students who know a little chemistry." Such knowledge is possessed by almost all teachers of chemistry, and by many other teachers; and by these the book before us can be read with a very great deal of pleasure and profit. The author believes it to be generally true that the value of items of knowledge is directly proportional to the simplicity with which they can be presented (this sounds a little like James), and he has therefore made earnest efforts, often successful, for lucidity. The result of this is that the book is eminently readable. Also, it is philosophic in attitude and broad in its viewpoint. One could anticipate difficulty in using such a book as a text in a college course of physical chemistry if it were too readable and too philosophic, and some measure of this difficulty has been experienced by the reviewer; but, for the private and more mature reader, no such difficulty can exist.

The titles of some of the thirty chapters which the book contains are as follows: "The Scientific Method"; "Spectroscopic Evidences and the Theory of Inorganic Evolution"; "Luminiferous Ether and Vortex Rings"; "Radio-

activity and the Electron Theory"; "Solid Solutions"; "Colloidal Solutions"; "Liquefaction of Gases"; "Some Elementary Thermodynamic Deductions"; "Actinochemistry." Examples of the side-heads to paragraphs may serve to show that the topics selected for treatment are not by any means identical with those common to other similar textbooks; such side-heads are: "Relativity Principle," "Table of Energies and Their Factors," "Landolt's Experiments," "Significance of Valence," "Archimedes' Spiral [of the elements]," "Protyle," "Emission of Light and Temperature," "Stefan's Law," "Bolometer," "Protoelements," "Zeeman Effect," "Canal Rays," "The Value of e/m," "Stokes' Law," "Siendentopf and Zsigmondy's Results," "Brownian Movement," "Kundt's Method," "Etch Figures," "Agglutination," "Three Ways to Damage a Storage Cell," etc.

Occasionally a paragraph seems to require remodeling from the viewpoint of the physicist, as in the proof of the equation $pv = \frac{1}{3}\, mnc^2$ (pp. 137–38); but this is infrequent. The 81 figures in the text are particularly clear, and as simple as they can be made. The chart on p. 148, after Johnstone Stoney, comparing the largest (astronomical) and the smallest (electronic) dimensions that we have measured and estimated, ought to be on the wall of every science classroom. But this is only one of many suggestions that any science teacher will gather from this excellent volume.

The proofreading was good, and the publishers have performed their functions creditably. Let those who doubt whether they ought to read the book be decided by the following quotation from the first chapter: "[Our subject] stands in the same relation to the subdivisions of the science of chemistry in which philosophy stands toward all sciences."

ALAN W. C. MENZIES

OBERLIN, OHIO

The School: An Introduction to the Study of Education. By J. J. FINDLAY. "The Home University Library of Modern Knowledge." New York: Henry Holt & Co. $0.50 net.

While this book is concerned primarily with the elementary school, it contains many valuable references to secondary schools. Dr. Findlay was a pioneer in urging the advantage of the Herbartian movement upon English school men but like many others he has found in Dr. Dewey's work a more satisfactory basis, and he has made the latter's writings available to English readers.

The author traces the change that has come over Englishmen of other than the "ruling class" in favor of extending the "period of infancy" to seventeen or eighteen. His comment is: "But the 'leisure' and freedom of secondary education is not good for all, only for those, whether rich or poor, whose character is fitted for it." Concerning too early specialization and vocational and cultural training, he says: "The influence which his [a boy's] schooling will exert on his vocation will not come mainly from his special preparatory

attention to mathematics, but from his free general growth in an atmosphere, intellectual and social, which suits his nature."

"Every youth, boy or girl, even if able to earn some wages, needs to be retained under strong control until he has completed the first period of adolescence, i. e., until the age of eighteen or thereabouts." It seems clear that a regimen which deprives our youth, boys and girls, from any share in industrial or domestic toil goes counter to their natural instincts of social service and tends to unfit them for a proper understanding of the world. There are good statements in the book of the characteristics of the adolescent period and of the curriculum which meets its needs. There is also an excellent bibliography and index.

FRANK A. MANNY

BALTIMORE TEACHERS TRAINING SCHOOL

Lutheran Teacher-Training Series for the Sunday School. Book Two. *The Pupil and the Teacher.* By LUTHER A. WEIGLE. Philadelphia: The Lutheran Publication Society, 1911. Pp. 217. Paper, $0.35; cloth, $0.50.

This little volume will have a distinct interest for all who are seriously concerned with the problem of training Sunday-school teachers. It is an admirable text for training classes in the Sunday school, and should be of much value as a basis for a similar course in college or university.

Part I contains a series of eleven lessons on a well-balanced and clearly written account of mental development from childhood through adolescence, with special sections devoted to instinct, habit, will, etc.

Part II is devoted to methods of teaching (ten lessons). Here arguments for graded work are presented, suggestions as to lesson-planning, getting the pupil to work, utilization of the principles of apperception and attention, how to ask good questions, the class as a social institution, the spiritual goal, and Jesus, the ideal teacher.

The work abounds in excellent illustrations, and at the end of each lesson are suggestive questions for study and discussion.

The author naturally strives to state clearly old and accepted principles rather than anything new or speculative. His originality shows itself in the arrangement of the work and in the emphasis which he gives various points. It is difficult to imagine how the simpler principles of psychology and pedagogy could be presented more effectively.

IRVING KING

UNIVERSITY OF IOWA
IOWA CITY, IOWA

The Culture of Religion. By EMIL CARL WILM. The Pilgrim Press. Pp. 201. $0.75 net.

In this volume Professor Wilm gives a well-ordered and fairly comprehensive account of the various activities and agencies in home, school, and

church which contribute to the development of religious character in the young, and points out the main lines along which progress should be made. In method and language the book has not much freshness or originality, it is in fact somewhat academic in style, but it sets forth in concise and helpful fashion the essential elements of the great problem of religious education. The author's comments are always sensible and are often suggestive. The most important chapter is probably that on religion in the public schools, which tells clearly and keenly of the ways in which the public school may, without being sectarian, cultivate religious feeling and purpose.

NORMAN F. COLEMAN

REED COLLEGE
PORTLAND, OREGON

Synonyms, Antonyms and Associated Words. By LOUIS A. FLEMMING. New York: Putnam, 1913. Pp. viii+619. $1.25.

Mr. Flemming's idea in this alphabetical list of some fifteen thousand entries, each rarely of more than three lines, is rather that of a thesaurus than of a book of synonyms; he hopes to suggest the word that his consulter seeks. He presumes (p. iv) the possession of a dictionary, and therefore makes no attempt at definition and not enough at demarkation of senses (*imperative, impertinent*). Without a dictionary the mere string of related words which constitutes each entry must mislead untrained writers to indiscriminate use of the words suggested; yet the author hardly adds enough to the synonymy and definitions of *Webster* or the *Standard* to justify his work as a supplement. At best it may serve experienced writers as a handy desk companion—more convenient, if less informative, than March's *Thesaurus*.

The execution reveals imperfect instinct for the key-word: "abashment," "abnormity," "absquatulate," "mulligrubs," "puke," "savvy," may well be replaced by synonyms, but who will consult Mr. Flemming for substitutes? "Rabies" is listed, but not "hydrophobia." A system of cross-references would not only have saved a hundred pages and permitted logical sense divisions in each entry; it would have prevented numerous inconsistencies. Thus, **"collect,** *v.* assemble, *accumulate.*" Why, then, should "assemble" be accorded six synonyms, not including "collect"? Why is "accumulate" not listed? On the same page "college" affords no list of similar institutions, such as "university," "gymnasium," "academy." Nor are these words listed; for them we must look under "school." To Mr. Flemming "college dress" suggests "academicals," but not "cap and gown"; "college student" suggests "collegian," but not "grind," "scholar," etc.

My experience as a teacher in composition leads me to believe that such a book is likely to promote variety, perhaps, but not exactness, of vocabulary.

PERCY W. LONG

HARVARD UNIVERSITY

One Hundred Lessons in Agriculture with Practical Problems. By ARETAS NOLAN. Chicago: Row, Peterson & Co., 1911. Pp. 351.

The one hundred lessons follow the cycle of the seasons, their arrangement being determined much more by their fitness to each of the twelve months than by any inherent order. Most of the lessons are so intimately connected with the accompanying practical exercises and arithmetic problems, that a teacher attempting to teach the subject as a book study would show up to a disadvantage before any class of ordinarily bright children, for the questions are of a rather compelling nature. The work is well adapted to the eighth or ninth grade. One can scarcely think of an activity of rural life not touched upon, even the mail-carrier and the weather service. The operations do not call for elaborate apparatus. The individual teacher would probably introduce changes at times, supplementing here and omitting there; as, for instance, questions relating to the number of segments in the foot of a grasshopper, and the like. Although some of the illustrations merely illustrate, most of them supplement the text in a very helpful manner. While the nature-study spirit is predominant over the organized science ideal, utility is spelled large over every page. It is adapted for use as an introductory course rather than in strictly vocational classes.

A Laboratory Manual of Agriculture for Secondary Schools. By LELAND E. CALL and E. G. SCHAFER. New York: Macmillan, 1912. Pp. xiii+344. $0.90 net.

This series of eighty-one exercises is arranged, to some extent, in seasonal sequence. Every line of farm activity is represented. Each exercise calls for some kind of observation or experimentation by the pupil himself. The directions are much more detailed than those appended to textbooks of agriculture and are accompanied by well-worked-out blanks for recording results. The slips incidental to a first edition are few and unlikely to be misleading. The book is not indexed but contains useful apparatus lists.

Farm Boys and Farm Girls. By WILLIAM A. MCKEEVER. New York: Macmillan, 1912. Pp. xviii+326. $1.50 net.

A combination of the "inspirational" type of book and a social worker's manual, with many problems carefully analyzed and solutions proposed. While somewhat prolix and containing too much preachment for a busy person, it contains much helpful material. Its twenty chapters cover a wide range, some of the topics dealt with being the country church, school, and farm dwelling; juvenile reading, social training, and the country Y.M.C.A. work; the young people as related to agriculture, business, and home-making. The reference lists of collateral reading are valuable.

C. H. ROBISON

MONTCLAIR STATE NORMAL SCHOOL

BOOKS RECEIVED

ENGLISH

Austen, Jane. Sense and Sensibility. New York: Macmillan, 1913. Pp. 347. $0.25.

Baldwin, James. John Bunyan's Dream Story. New York: American Book Co., 1913. Pp. 198. $0.35.

Brown, Rollo Walter, and Barnes, Nathaniel Waring. The Art of Writing English. New York: American Book Co., 1913. Pp. 382. $1.20.

Eliot, George. The Mill on the Floss. New York: Macmillan, 1913. Pp. xix+554. $0.20.

Harris, William T. Advanced English Grammar. Yonkers: World Book Co., 1912. Pp. 511.

Neilson, William Allan, and Thorndike, Ashley Horace. The Facts about Shakespeare. New York: Macmillan, 1913. Pp. vii+104.

Newcomer, Alphonse Gerald. American Literature. Chicago: Scott, Foresman & Co., 1913. Pp. 364. $1.00.

Pittenger, L. A. A Collection of Short Stories. New York: Macmillan, 1913. Pp. 358. $2.15.

Stevenson, Robert Louis. Treasure Island. A. S. Barnes & Co., 1913. Pp. 275.

Watson, Mary H. Boswell's Life of Samuel Johnson. New York: Macmillan, 1913. Pp. xxiv+381. $0.20.

HISTORY

Channing, Edward. Students' History of the United States. New York: Macmillan, 1913. Pp. xxx+601. $1.40.

Tuell, Harriet E., and Hatch, Roy W. (compiled by). Readings in English History. Boston: Ginn & Co., 1913. Pp. ix+515. $1.40.

SCIENCE AND MATHEMATICS

Campbell, Matilda G. A Textbook of Domestic Science for High Schools. New York: Macmillan, 1913. Pp. vii+219. $0.90.

Clute, Willard Nelson. Laboratory Manual and Notebook in Botany. Boston: Ginn & Co., 1913. Pp. 65. $0.50.

Coulter, John Gaylord. Plant Life and Plant Uses. New York: American Book Co., 1913. Pp. xvi+464.

Ford, Walter Burton, and Ammerman, Charles. Plane and Solid Geometry. New York: Macmillan, 1913. Pp. ix+321.

Hunt, Thomas Forsyth, and Burkett, Charles William. Agriculture, Soils, and Crops. New York: Orange Judd Co., 1913. Pp. xiii+541.

Moritz, Robert E. A Textbook on Spherical Trigonometry. Boston: F. H. Gilson Co., 1913. Pp. vi+67. $1.00.

Overton, Frank. General Hygiene. New York: American Book Co., 1913. Pp. 382. $0.60.

Overton, Frank. Personal Hygiene. New York: American Book Co., 1913. Pp. 240. $0.40.

Pierce, Walter. Pecheur d'Islande. Boston: Ginn & Co., 1913. Pp. xvi+203. $0.45.

Putnam, Helen C. School Janitors, Mothers, and Health. Easton, Pa.: American Academy of Medicine Press, 1913. Pp. ix+201. $1.00.

Werremeyer, D. W. Arithmetic by Practice. New York: The Century Co., 1913. Pp. iii+80.

EDUCATION

De Garmo, Charles. Aesthetic Education. J. Horace McFarland Co. Pp. xi+161.

De Garmo, Charles. Principles of Secondary Education. New York: Macmillan, 1913. Pp. xiii+338. $1.25.

Dodge, Richard E., and Kirchwey, Clara B. The Teaching of Geography in Elementary Schools. Chicago: Rand McNally & Co., 1913. Pp. vii+248.

Rapeer, Louis W. School Health Administration. New York: Teachers College, Columbia University, 1913. Pp. 358. $2.15.

Ruger, Henry A., and Bussenius, Clara E. (Translators). A Contribution to Experimental Psychology: Ebbinghaus, Hermann. New York: Teachers College, Columbia University, 1913. $1.00.

Thorndike, Edward L. Individuality. Boston: Houghton Mifflin Co., 1911. Pp. 56. $0.35.

Todd, Arthur James. The Primitive Family as an Educational Agency. New York: Putnam, 1913. Pp. viii+351. $1.75.

Trowbridge, Ada Wilson. The Home School. Boston: Houghton Mifflin Co., 1913. Pp. xvii+98.

Walker, Isaac. The New Hampshire State Teachers' Association. Dover, N.H.: Neal Printing Co., 1913. Pp. 149.

Wallin, J. E. Wallace. Experimental Studies of Mental Defectives: A Critique of the Binet-Simon Tests and a Contribution to the Psychology of Epilepsy. Baltimore: Warwick & York, Inc., 1912. Pp. 155. $1.25.

MISCELLANEOUS

Dippold, George Theodore. A Scientific German Reader. Boston: Ginn & Co., 1913. Pp. liii+361. $1.00.

Janes, Arthur L., and Jenks, Paul R. Bellum Helveticum (Beginners' Book for Latin). Chicago: Scott, Foresman & Co., 1913. Pp. 440. $1.00.

Kleist, James A., S. J. Aids to Latin Prose Composition. New York: Schwarta, Kirwin & Fauss, 1913. Pp. vii+104.

Moran, George Newell. Kwahu, the Hopi Indian Boy. New York: American Book Co., 1913. Pp. 237. $0.50.

CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, University of Chicago

Army and navy condemnation of football. Lit. D. 47:941. (15 N. '13.)

Backward children and forward teachers. A symposium. Train. School M. (N.J.) 10:97–104. (N. '13.)

Bidwell, Alice T. A course in letter-writing. English J. 2:562–66. (N. '13.)

Bobbitt, J. F., Boyce, A. C., and Perkins, M. L. Literature in the elementary curriculum. El. School T. 14:158–66. (D. '13.)

(A) book-mark to save eyesight. Lit. D. 47:1003. (22 N. '13.)

Bostwick, Arthur E. The making of an American library. III. Bookman 38:399–404. (D. '13.)

Brown, Horace G. Efficiency in teaching by pictures. Educa. 34:171–78. (N. '13.)

Canby, Henry Seidel. The luxury of being educated. Harper 128:68–74. (D. '13.)

Carpenter, D. F. Mental age tests. J. of Educa. Psychol. 4:538–44. (N. '13.)

Child-life in Palestine. Liv. Age 269:437–41. (15 N. '13.)

(A) Chinese Helen Keller. Lit. D. 47:876–77. (8 N. '13.)

Churchman, P. H. The place of study on the curriculum. Pop. Sci. Mo. 83:567–80. (D. '13.)

Coover, J. Edgar. The Union High School questionnaires. Educa. 34:153–61. (N. '13.)

(The) Daniel Boone idea in education. A school system based on voluntary work. Sci. Am. 109:361, 370–71. (8 N. '13.)

Eliot, Charles W. Governmental mothering. Harp. W. 58:14. (15 N. '14.)

Fee, Mary Helen. Teaching English to Filipinos. English J. 2:539–45. (N. '13.)

Freeman, Frank N. Some practical studies of handwriting. El. School T. 14:167–79. (D. '13.)

Gosling, Thomas Warrington. Tobacco and scholarship. School R. 21: 690–93. (D. '13.)

[1] *Abbreviations.*—Atlan., Atlantic Monthly; Educa., Education; El. School T., Elementary School Teacher; English J., English Journal; Harp. W., Harper's Weekly; J. of Educa. Psychol., Journal of Educational Psychology; Lit. D., Literary Digest; Liv. Age, Living Age; Pop. Sci. Mo., Popular Science Monthly; Psychol. Clinc., Psychological Clinic; School R., School Review; Sci. Am., Scientific American; Train. School M. (N.J.), Training School Magazine (New Jersey); U.S. Bur. of Educa. Bull., United States Bureau of Education Bulletin.

Grady, William E. Measuring efficiency of instruction. Psychol. Clinic 7:145–52. (N. '13.)

Hoffman, Frederick L. Some vital statistics of children of school age. School R. 21:657–69. (D. '13.)

Huey, E. B. The education of defectives and the training of teachers for special classes. J. of Educa. Psychol. 4:545–50. (N. '13.)

Inaccessible museums. Lit. D. 47:1005–6. (22 N. '13.)

Locard, Frederic. The study of French in the public high schools of the United States. School R. 21:682–89. (D. '13.)

Mauller, C. T. A solution for public speaking in the high school. Educa. 34:162–68. (N. '13.)

Melbourne, Margaret. Children and the theatre. Home Progress 3:68–71. (O. '13.)

Miller, Kelly. Moral pedagogy. Educa. 34:133–44. (N. '13.)

Minnick, J. H. An experiment in the supervised study of mathematics. School R. 21:670–75. (D. '13.)

Moore, Charles Leonard. On education. Dial 55:395–97. (16 N. '13.)

Parker, S. Chester. Bibliographies, briefs, and oral exposition in normal schools. English J. 2:546–50. (N. '13.)

Paton, Stewart. The essentials of an education. Science 38:758–62. (28 N. '13.)

Reavis, W. C. The interests of children of the primary and intermediate grades in the use of color. El. School T. 14:180–86. (D. '13.)

Rihbany, Abraham Mitrie. At the feet of my teachers. Atlan. 112:791–801. (D. '13.)

Scott, Colin A. General intelligence or "school brightness." J. of Educa. Psychol. 4:509–24. (N. '13.)

Shall we harden our children? Lit. D. 47:942. (15 N. '13).

Starch, Daniel, and Elliott, Edward C. Reliability of grading work in history. School R. 21:676–81. (D. '13.)

Strong, Frank. Some educational problems in Kansas. Science 38:730–34. (21 N. '13.)

Taft, L. E. The recitation as a factor in producing social efficiency. Educa. 34:145–52. (N. '13.)

Thorndike, Edward L. Notes on the significance and use of the Hillegas scale for measuring the quality of English composition. English J. 2:551–61. (N. '13.)

Winch, W. H. Experimental researches on learning to spell. J. of Educa. Psychol. 4:525–37. (N. '13.)

Wolcott, J. D., ed. Monthly record of current educational publications. U.S. Bur. of Educa. Bull., 1913, No. 45. (N. '13.)